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COMPUTERWORLD

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Honeywell Bull axes 1,600 jobs

BY NELL MARGOLIS
CW STAFF

BILLERICA, Mass. — Honeywell Bull, Inc. announced Friday it will streamline its U.S. work force by some 1,600 — 16% of the current complement.

The move is an attempt to attain fighting trim for "leaner, harder, faster competition" in a turbulent computer industry, said Roland Pampel, Honeywell Bull president.

While he declined to specify a figure, Pampel said that the reduction is expected to save the $2 billion international Bull partnership "a lot of money. It will result in a fairly significant improvement in overall costs."

The move may prove more effective than many other instances of work force reduction, including some at Honeywell Bull, predicted Donald Bellomy, an analyst at International Data Corp., a market research firm in Framingham, Mass. "They're not just protecting the bottom line, although there is that aspect; they're also focusing on redundancies and inefficiences that really do exist," Bellomy said.

The partnership of Groupe Bull, Honeywell, Inc. and NEC Corp. necessarily left Honeywell

Continued on page 85

DEC bids for desk top — again

Rollout to blanket workstation power range, hint at SAA alternative

BY JAMES DALY
CW STAFF

MAYNARD, Mass. — In terms of reaching the desktop market, it's crunch time for DEC.

Digital Equipment Corp. will begin at least its third attempt to win the hearts and dollars of desktop users tomorrow when it unleashes an array of hardware and software products designed to quickly and cleanly make it a dominant player in the flourishing desktop market.

The major hardware components of what DEC officials called the largest introduction in the firm's 31-year history — the extravaganza will fill a building in nearby Littleton, Mass., that has been dubbed Dectop University for the occasion — will range from personal computers to workstations capable of processing about 10 million instructions per second. In one fell swoop, DEC hopes to blunt the expansion of competitors like Sun Microsystems, Inc. that have carved out significant market share.

Additionally, DEC faces the slippery marketing task of selling to users who still remember its unsuccessful 1982 desktop rollout, at which the company introduced three incompatible systems: Decmate, Rainbow and Professional. The 1985 Vaxmate introduction was also nothing short of a sales disaster.

The machine that analysts claimed will be most likely to put sweat on DEC's competitors'

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John Akers speaks out

ANDY FREEBERG

***IBM is 'more humble'** after weathering tough times but is ready to help MIS deal with challenges, Akers says in exclusive interview. Pages 14, 15.*

No managers need apply at this site

BY ALAN J. RYAN
CW STAFF

ST. LOUIS — When the first self-managed work group within McDonnell Douglas Corp.'s information systems organization was formed, it took the group 15 minutes just to decide when its first meeting should be held. "Tuesday is bad for me." "I have a dentist appointment Wednesday morning." It went on and on because there was no manager who could simply say, "Meeting at 10 a.m. Tuesday. Be there."

It isn't easy to get started in self-managed work groups, in which employees are their own bosses. But the vision of Wendell O. Jones, McDonnell Douglas' director of information resource management, is that self-managed groups will eventually encompass all of the functional areas of his 220-member corporate IS organization and change the way it is managed.

TREND SETTERS

The concept is not new to the company, although this is the first time it has been tried in IS. According to Jones, McDonnell Douglas was using the approach in its manufacturing operations. In fact, Jones said he sees the manufacturing experience as justification for such a change: "There is a high level of employee commitment. . . . People feel empowered to be responsible for the quality of the process and product rather than having bosses or supervisors tell them what to do."

But the self-management concept was not mandated for IS, and Jones said he was initially unaware of his company's experience in that area until he began considering it himself. "I found out that what I am doing is being encouraged throughout my organization," he said.

Jones' objective is to expand the concept's use as rapidly as possible, although there are situations — such as one-person projects and geographically separated teams — in which it will not be feasible. But although he conceded that some managers may not be ready for such a change, he added that "most of my programmer and analyst teams in the MIS organization are functioning in [team efforts], and even those who don't function that way will understand that the overall culture of the organization encourages people to come up with ideas and encourages them to work as a team."

"One change I've noticed is that there is *not* a reluctance on the part of employees to take on

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"If they're good products, we don't care how late they are getting to market."

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Hacker prosecution

Suspect held, denied phone access by district court

BY J. A. SAVAGE
CW STAFF

LOS ANGELES — Deemed a potential threat to society, a suspected hacker has spent more than a month in jail awaiting a late February trial for allegedly defrauding Digital Equipment Corp. and MCI Communications Corp. and transporting proprietary software across state lines.

Kevin David Mitnick, 25, from Panorama City, Calif., could spend up to 30 years in jail and face a $750,000 fine if convicted. The U.S. Attorney's Office said it expects to file a new indictment superseding the above three felonies.

Mitnick pleaded not guilty to all three charges Tuesday. "He's being used as a scapegoat for a lot of hacking," his attorney, Alan Rubin, claimed last week.

Public enemy

Mitnick is being held in a high-security area of Los Angeles' Metro Detention Center. "The court ruled him a risk and a danger to the public," said prosecutor Leon Weidman. U.S. District Court Judge Mariana Pfaelzer refused to allow Mitnick access to telephones, as other inmates have, because the U.S. Attorney's Office is afraid that he may have preprogrammed a computer to trigger programs with a phone call, according to Weidman.

Rubin attributed that restriction to prosecutorial paranoia, saying, "They're frightened of people who understand computers."

In affidavits filed in the case, the Federal Bureau of Investigation is reported to have found an associate of Mitnick's — Leonard Mitchell Di Cicco, an employee at Voluntary Plan Assistance (VPA) in Calabasas, Calif. — who said that Mitnick was illegally accessing DEC systems from a VPA terminal. Telephone charges were "routinely changed by Mitnick from VPA's MCI telephone account to some unknown or nonexistent account."

After Mitnick was arrested Dec. 9, FBI agent Christopher Headrick, with the help of Di Cicco, found an unauthorized copy of DEC's Security Software System stored in a computer in the University of Southern California in November, to which Mitnick apparently had access. "Lots of people have access to USC computers," Rubin noted.

DEC Manager of Investigative Services Chuck Bushey, in part of the affidavit, said that four unauthorized intrusions in DEC's computer system resulted in access to the security software. The intrusions have cost DEC $4 million, according to the affidavit. DEC would not comment on the case.

Mitnick was convicted in 1981 and 1983 of stealing technical information from Pacific Bell and accessing USC computers.

U.S. airports to install employee card system

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — In an effort to beef up security, U.S. airports will be required to install computer-controlled card systems that use magnetic identification cards to control employee access to sensitive areas, according to a new regulation from the Federal Aviation Administration.

The announcement last week was in response to a December 1987 plane crash in California that killed 43 persons; it apparently was caused when a former airline employee opened fire with a gun during the flight. Investigators suspect the worker used his old airport identification card to board the plane.

Computer-controlled card systems can be programmed to keep a record of employees who try to enter areas in which they are not authorized. "They also can reject cards that have been reported lost or stolen or that have not been surrendered by former employees," said Secretary of Transportation James H. Burnley IV.

Computer-card or equivalent systems must be installed at the nation's busiest airports by early 1991, according to the FAA regulation. Information is encoded on a magnetic strip or chip in the cards and then scanned by a card reader at entry points.

About a dozen airports already have effective computer-card systems, the FAA said, but other airport operators complained that the FAA requirement is too hasty and too expensive, especially for smaller airports. The FAA disagreed, saying the average initial cost per airport will range from $56,000 to $1.5 million, depending on the size of the airport.

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Defense project draws fire

BY MITCH BETTS
CW STAFF

They're not likely to make a movie about this.

Five years after the film *War Games* had audiences on the edge of their seats over the deadly escapades of a computer gone haywire at the North American Aerospace Defense Command (Norad), a government report has concluded that Norad's project to build a replacement computer system is over budget, behind schedule and does not meet critical requirements.

Norad, the military's attack-warning center deep within Colorado's Cheyenne Mountain, processes data from a variety of sensors to warn U.S. and Canadian leaders of airborne attacks. The center is in the middle of a $281 million program to replace its aging computer communications system.

Trouble, trouble, trouble

However, the U.S. General Accounting Office (GAO) reported last month that the project has run into big problems. Software for the replacement system is unstable and prone to failures, and restarting the system after a power loss takes an unacceptable 31 minutes, the GAO said.

In addition, the auditors said, the new equipment is incompatible with other Cheyenne Mountain equipment because it uses a different wiring standard; installing new cables will be difficult because of a "rat's nest of cabling under the floor."

The U.S. Air Force said it is addressing all of these problems. According to the Air Force response to the GAO report, the contractor must fix the software at no cost to the government and meet the restart requirement of two minutes for critical circuits and 26 minutes for others.

Norad computers achieved fame in the 1983 hit movie *War Games*, in which a teenage hacker tapped into a hulking Norad supercomputer and started it playing a game of global thermonuclear war. A plot twist gave the computer control of the Norad early warning system, placing U.S. missiles on alert.

The GAO audit concerned the communications subsystem, whose processors control virtually all the digital communications at Cheyenne Mountain. The Air Force has wanted to replace the subsystem since 1981, mostly because it uses old Data General Corp. Nova 840 minicomputers that are hard to maintain. In 1984, the Air Force awarded the replacement contract to GTE Corp. in Stamford, Conn., but the installation date has slipped from 1986 to 1990, and the price has grown from $202 million to $281 million, the GAO said.

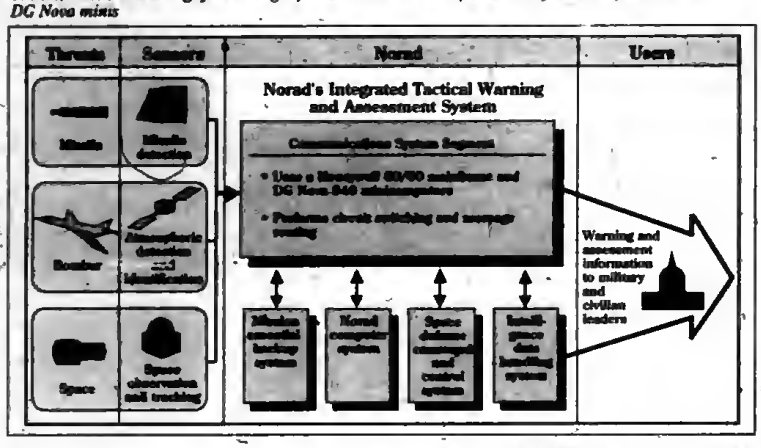
DG no longer makes spare parts for the Nova 840 — a 16-bit mini introduced in 1973 — so Norad personnel have had to make their own parts or salvage them from retired Novas, the audit said. The replacements are expected to come from Stratus Computer, Inc.

Due to delays in the replacement program, the Air Force began a $14 million program of interim upgrades to prolong the old system's useful life, including the replacement of its Honeywell, Inc. 60/60 mainframe with a Honeywell DPS 6000.

The GAO said that because these and other interim measures have improved system performance, much of the bogged-down replacement program may be unnecessary. But the Air Force disagreed, saying a complete replacement is needed because the existing software, written in assembler-level languages, is too costly to maintain.

Early-warning problems

The Norad attack warning system being replaced relies on an antiquated Honeywell mainframe and DG Nova minis



SOURCE: U.S. GENERAL ACCOUNTING OFFICE

Cincom to unwrap Supra upgrade in first quarter

BY JEAN S. BOZMAN
CW STAFF

Cincom Systems, Inc. is expected to unveil by March a completely rewritten version of Supra, its relational database management system, industry analysts briefed by the Cincinnati software firm said last week.

The announcement of Supra Version 2.0, as analysts called it, may come as soon as the first week in February at a database conference on the West Coast, where Cincom officials are scheduled to participate. Cincom executives would neither confirm nor deny the reports.

Some users questioned last week said Cincom told them that Supra 2.0 will run much faster than Supra 1.0. "Supra 2.0 will run above the 16M-byte line under IBM's MVS/XA," one Midwestern user said. "That's a major performance improvement."

This user also expects interfaces to major IBM subsystems, including IBM's VSAM, DB2, DL/1 and IMS.

Most users have signed nondisclosure agreements and declined to provide details about the announcement. Still, some said they are concerned that Supra 2.0 may be marketed as a new product rather than as a less costly upgrade from 1.0.

Tough conversion?

There are also conversion worries. Some users were told this fall that Supra 2.0 might not support Cincom's Total, an older DBMS. "Supra 1.3 gives you a bridge from Total to Supra," one user said. "Supra 2.0 does not have that bridge, so that the Total user is left hanging."

Still, there will be a migration path from Supra 1.0 to Supra 2.0, according to the Midwestern user. "Conversion tools will be provided, because the new version has a different file structure," the user explained. "But users should plan to migrate because, in time, the old version of Supra will go away."

Primary features of Supra 2.0, analysts said, include the following:

- Support for on-line transaction processing (OLTP) operating systems. New maintenance features will allow software changes to be made without interrupting the central CPU engine.
- Support for a wide variety of Unix computers and workstations. Initially, support will be provided for processors from Amdahl Corp., Apollo Computer, Inc. and a few others; the second tier of Unix systems, including Digital Equipment Corp.'s Ultrix operating system and Sun Microsystems, Inc. products, is expected later this year.
- Support for both ANSI SQL and the international SQL standard, which will provide compatibility with IBM's DB2 relational DBMS product.

CORRECTIONS

The charts accompanying the Product Spotlight on IBM and compatible PC products [CW, Dec. 19] gave an incorrect phone number for Relisys. The correct number is 408-945-9000.

Ross Systems was incorrectly reported as holding an approximate 25% share of the Digital Equipment Corp. VAX accounting software market [CW, Nov. 14]. According to market research firm Computer Intelligence, Ross' share of that market increased by 75% between June 1987 and April 1988.

The Dec. 26/Jan. 2 Industry Insight column erroneously included Scientific Computer Systems in a list of "Casualties of 1988." The San Diego-based maker of Cray Research, Inc.-compatible minisupers continued to grow in 1988 and completed an $8.8 million round of venture capital financing in the third quarter.

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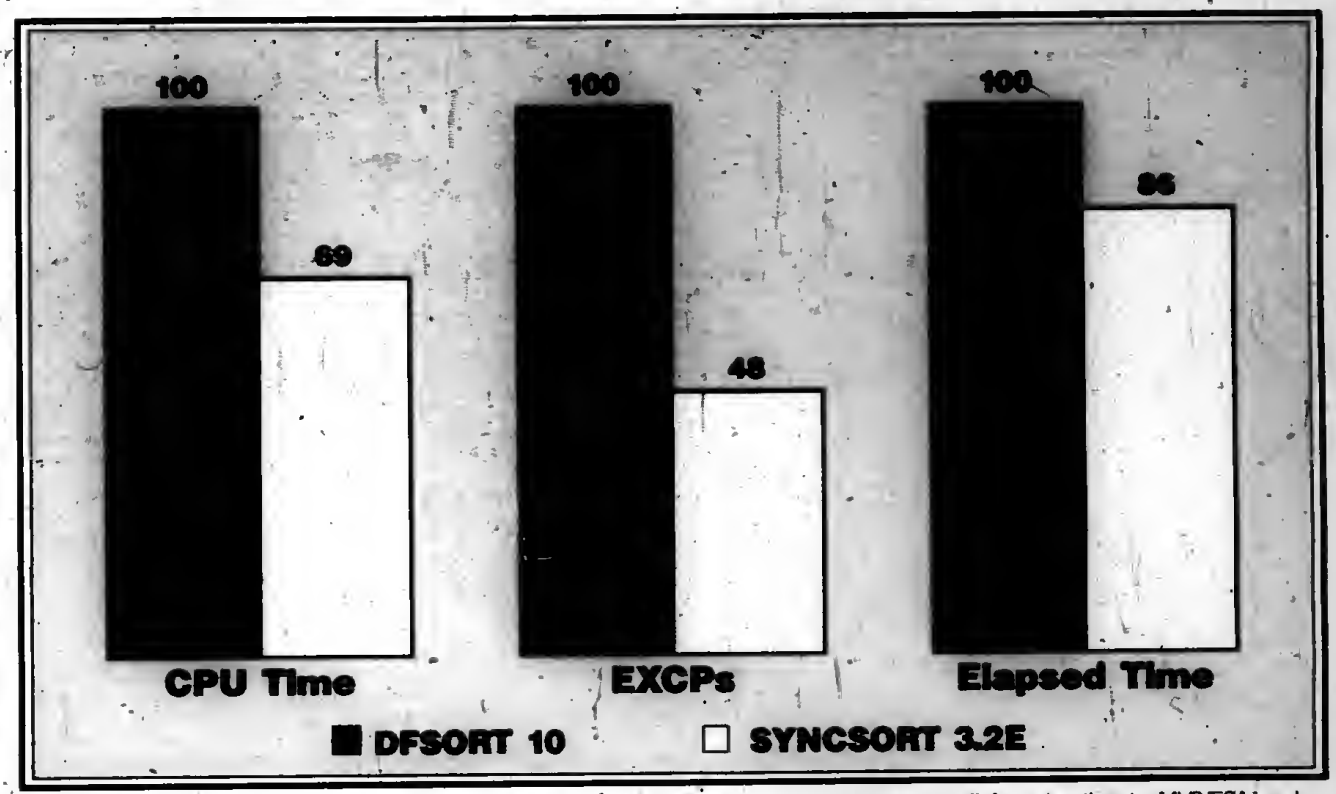

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NEWS SHORTS

Arthur Andersen restructures

Arthur Andersen & Co.'s 2,200 partners approved a restructuring plan last week that places the firm's consulting practice on an equal footing with its traditional tax and audit practices. Starting Sept. 1, Andersen will have two reporting structures to the partnership's chief executive officer — one for consulting and another for the tax and auditing groups. A new chief executive officer will also be elected, replacing current CEO Duane Kullberg, who has held that post since 1980. The moves came in response to pressure from the consulting partners, seven of whom left late last year to start their own practice.

DEC signs with Apollo

Following in the footsteps of IBM and Hewlett-Packard Co., Digital Equipment Corp. has announced plans to license Apollo Computer Inc.'s Network Computing System (NCS) for possible use in future products. NCS, which Apollo has proposed as part of the Open Software Foundation's software environment, is said to provide tools for distributing applications across a multivendor computing network. Apollo, meanwhile, has announced the immediate availability of NCS versions for DEC's VMS and Ultrix and for Sun Microsystems Inc.'s SunOS operating systems.

Comten boosts processor

NCR Comten, Inc. is expected this week to announce an enhancement that reportedly boosts the Comten 5660 communications processor's total throughput to 80% greater than that of IBM's 3745. However, the firm said that the comparison only refers to IBM's single-processor 3745 Model 210 and does not refer to the dual-processor version. The High Performance Feature board is available now and is priced at $60,000. NCR Comten said it will also reduce the 5660's base price by $125,000 to $175,000.

Dataproducts not looking to sell

Printer products supplier Dataproducts Corp. last week issued a statement indicating that it has responded to a takeover inquiry with a letter indicating that the board of directors "is not seeking to sell the company at this time." The company received a letter Dec. 12 seeking a meeting for an acquisition proposal from a representative of a New York investment group holding 5.2% of the company's stock. Dataproducts said last week any acquisition proposal should be submitted to the board in writing.

PC vendor woes Part I

Personal computer price-cutting and competition took a heavy toll on vendors last week. AST Research, Inc. announced it will report a loss for the second quarter ended Dec. 31 because of "the action of competitors who have announced price reductions, particularly on maturing systems." But about $6 million of the $7 million to $9 million loss could result from a charge for the potential sale of AST's Camintonn division, which the company acquired in 1986 for its DEC add-on products.

PC vendor woes Part II

Also troubled in the PC arena is Wyse Technology, which last week announced an impending quarterly loss, the departure of its president, a 15% work-force reduction and a revenue plunge of 50% from year-earlier levels. President and Chief Operating Officer Phillip E. White, who joined Wyse from IBM in 1986, left to become CEO of database software vendor Informix Corp. Wyse will reportedly cut 560 jobs; 400 of those cuts are expected to come in Far East manufacturing. In addition, the San Jose, Calif., personal computer and terminal maker said it sought and received waivers from certain financial obligations to its lenders.

Wyse's White

GM to lift fiber MAP ban

BY ELISABETH HORWITT
CW STAFF

DETROIT — General Motors Corp. has finally announced plans to embrace fiber-optic cabling for the factory floor. But this about-face comes several months after the MAP 3.0 standard was frozen in place. As a result, users are likely to face a lengthy wait for fiber-based Manufacturing Automation Protocol networking products.

"We recognize that fiber will be part of the action," said Jack Eichler, GM's director of advanced manufacturing engineering. "We will install it when it becomes part of the MAP standard." That may not be anytime soon because right now, Eichler said, "the connection technology is different depending on which vendor you go to."

But sources both inside and outside of GM complained that a solid, consistent fiber-optic MAP standard would be available now if the top people in GM's MAP effort had supported the effort. Under GM's leadership last summmer, the MAP/TOP Steering Committee finalized MAP 3.0 for the next six years, with fiber-optic cable relegated to an equivocal position in the standard's appendix.

MAP barriers

Until such time as fiber becomes part of the main standard, GM has officially barred the medium from its factory floors, according to Ali Bahroloomi, chairman of GM's MAP Task Force and manager of communications networks at GM's Buick Oldsmobile Cadillac division. Internally at GM, broadband and carrierband are currently the media that should be implemented into manufacturing and industrial applications, Bahroloomi said.

GM spokesmen admitted that the fiber-optic medium has advantages that are uniquely suited to factory networking applications. For example, it has far greater bandwidth capacity and greater resistance to electrical interference and other environmental factors than coaxial cable.

But fiber has gotten no encouragement from GM's MAP leaders in the past, according to Orest Storoschuk, an engineer at GM's Cadillac Pontiac Canada division who has championed fiber-based networking at GM for the past decade. In particular, Michael Kaminski, former MAP project manager at GM, has been consistently pushing broadband cabling over fiber-optics, Storoschuk said.

"It's fair to say that the priority [of MAP leaders at GM] has never been to put fiber into MAP but to get the basic MAP specification in place," said an industry consultant who requested anonymity. "I think the fiber standards effort could have gone faster without compromising this goal."

Group approval

A fiber-based version of the MAP 802.4 Token-Bus protocol gained approval from the Institute of Electrical and Electronics Engineers, Inc. (IEEE) this fall, which "in LANs, is normally tantamount to [becoming] a standard," said Robert Crowder, president of Newark, Del.-based manufacturing consulting company Shipstar Associates, Inc. Final approval from the International Standards Organization is expected in May, Crowder added.

However, "IEEE approval does not mean it has to be part of the MAP specification; they recommend a lot of things," Bahroloomi said. The 802.4H specification is now part of the MAP 3.0 appendix, but vendors are not required to include appendix items in their products in order to be MAP-compliant, Crowder said.

"Shipstar can already build a fiber-based MAP network now" based on available vendor products, but an appendix "does not carry the same level of endorsement of fiber-optic technology" that would encourage other vendors to enter the market, he added.

While MAP leaders at GM were officially banning fiber from the company's factory floors, the Chevrolet Pontiac division was quietly installing the forbidden medium on its local-area networks — including three fiber-based MAP networks that are currently in the works.

The networks employ MAP controller cards from Ungermann-Bass, Inc. and fiber-optic modems from Thomas & Betts Corp. in Bridgewater, N.J.

But Chevrolet Pontiac's fiber-based MAP projects are definitely the exception that proves GM's no-fiber rule, according to Storoschuk. The division started using fiber before MAP was defined, in 1979. Then when the standard came along, GM Canada received permission to implement it on top of its existing cable.

"If Oshawa asked to implement fiber now, no one would let them do that," Bahroloomi said.

Right now, GM is working with vendors to ensure interoperability of fiber-based MAP products. It is also "in the process of testing [fiber-optic cabling technology's] pros, cons, strengths and weaknesses," Eichler said.

Unix goes to entry level on DG 16-MHz Dasher

BY JAMES DALY
CW STAFF

WESTBORO, Mass. — Data General Corp. furthered its commitment to a Unix product line last week with the introduction of an entry-level, multiuser Unix system based on its Dasher/386 personal computer.

The Dasher/386 Unix platform will incorporate a 16-MHz Intel Corp. 80386 microprocessor, is compatible with the IBM Personal Computer AT and uses the 386/IX product set developed by Interactive Systems Corp.

The 386/IX product set is based on the AT&T-certified Unix System V/386 Revision 3.0.

The system features two of the University of California at Berkeley Unix 4.2 facilities: the C shell, which is a command-language interpreter; and Sendmail, a general-purpose, internetwork mail-routing facility.

The Dasher/386 Unix system supports up to 16M bytes of systems memory in 1M- or 4M-byte increments and offers up to 318M bytes of internal disk storage. Also provided will be intelligent eight-line serial controllers, which allow up to 25 asynchronous serial connections.

The Dasher/386 Unix system with 40M bytes of disk storage, 4M bytes of memory and a 386/IX runtime operating license is priced at $7,320. The same system with 70M bytes of disk storage costs $8,020.

The products reportedly will be available next month.

In a related announcement, DG made public the signing of an agreement with Framingham, Mass.-based Language Processors, Inc. (LPI). Under the terms of the pact, DG will offer LPI's 32-bit compilers on the Dasher/386.

HP combats DEC with low-end intros

BY J. A. SAVAGE
CW STAFF

SUNNYVALE, Calif. — Apparently vying for attention with Digital Equipment Corp., Hewlett-Packard Co. today is scheduled to introduce a bevy of products and announce price cuts.

Two high-end deskside personal computers based on Intel Corp.'s 80386 processors, an entry-level three-dimensional graphics workstation and a Zenith Data Systems Corp.-based laptop are scheduled for introduction today by HP, company officials confirmed last week. Additionally, the company plans to announce price cuts on three of its workstations, cutting the cost of 6-month-old Model 360SRX nearly in half.

It is no coincidence that HP's announcement coincides with DEC's desktop barrage this week (see story page 1), indicated John Logan, vice-president of the Aberdeen Group in Boston. "HP is jumping up and down to be compared to Digital," he said. "The company is realigning its price/performance to look better than DEC." Logan said he also expects HP to release benchmarks against DEC this week that "look intriguing."

Target: DEC

Hitting DEC directly, HP now offers a software package that converts VAX applications written in Fortran to be used on HP's Series 800 reduced instruction set computing (RISC) Unix-based machines.

The high-end PCs are the upper extensions of HP's Vectra line. The RS/25 uses Intel's 25-MHz processor and its 82385 cache controller. The Model RS/20 uses a 20-MHz chip. Because of the cache controller, the computer will run about 40% faster than earlier models on memory-intensive applications, according to Marlin Miller, HP product manager.

HP has carried an RS/20 since February 1988 at prices similar to the new models', which begin at about $7,500. While the older models had more main memory at the low end — 2M bytes on the Model 150 vs. 1M byte on the new Model 150E — the old models had no cache controller.

HP is set to make announcements in several product categories:

Laptops. Capitalizing on the popularity of Zenith's laptop, based on an Intel 80286 processor, HP said it is now retailing the Zenith machine under its logo with only slight additions in software.

The laptop, called the Vectra LS/12, has either a 20M- or 40M-byte hard disk at prices slightly higher than Zenith's, $4,879 and $5,479.

Workstations. Expanding its line of Motorola, Inc. 68030-based workstations, HP announced a low-end graphics workstation priced at $14,900. The Model 340SRX competes directly with Silicon Graphics, Inc.'s Personal Iris, introduced in October, and will cost $15,000.

Price reductions are also set to be announced today on three of HP's Motorola processor-based and HP's own RISC architecture workstations. A 42% price reduction will be granted to the mid-range 68030-based Model 360SRX, knocking the price from $34,965 to $19,900. The high-end Model 370SRX is due to get a 17% reduction to $41,000. Both were introduced midyear 1988.

VAX conversion software. A $10,000 conversion program for VAX applications written in Fortran to HP 3000 Series 800 multiuser RISC-based Unix computers is scheduled to begin today. The software tools alone can be obtained for $2,000, according to a spokesman.

Feds to track suspect docs

WASHINGTON, D.C. — The U.S. government is creating a nationwide database to help hospitals and medical licensing boards keep track of quacks.

The U.S. Department of Health and Human Services awarded a $15.9 million contract to Unisys Corp. Dec. 30 for the computer system, which the agency said is "intended to lessen the possibility that incompetent physicians and dentists may move their practices from state to state without detection."

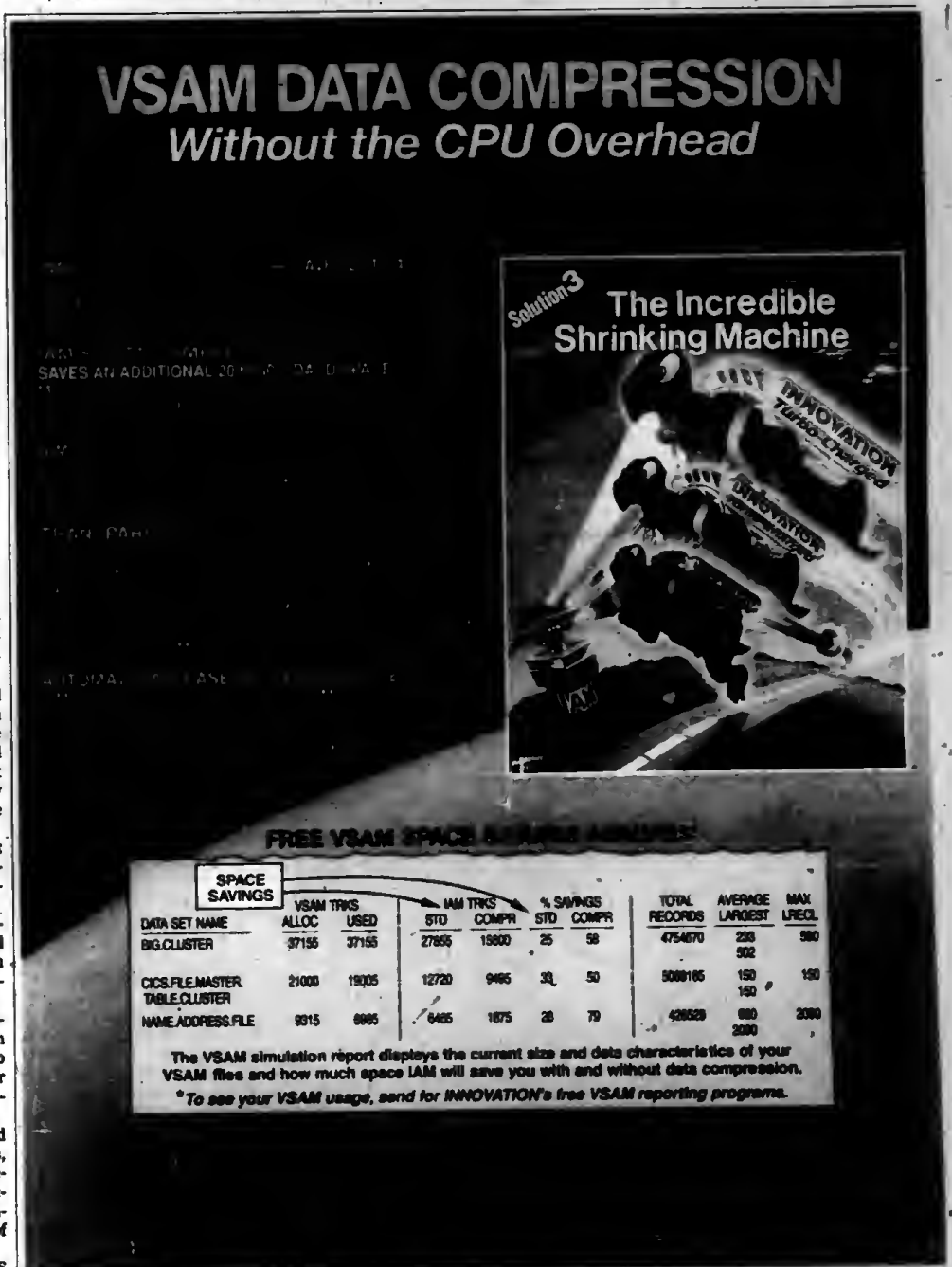
The National Practitioner Data Bank was authorized by the Health Care Quality Improvement Act of 1986 and is expected to be operational this summer.

The database — consisting of disciplinary actions, peer-review reports and malpractice claims — will provide a screening tool for hospitals and other organizations that hire doctors.

Members of Congress praised the department for implementing the law. "In the past, incompetents have been able to slip through the cracks and inflict poor medical care on the American consumer," said Rep. Ron Wyden (D-W.Va.).

Access to the database will be limited to hospitals, group medical practices, state licensing boards and individual doctors. The public will not have direct access, due to privacy safeguards, but consumers are the ultimate beneficiaries of the system, said spokesman Frank Sis.

MITCH BETTS



Decwindows to cement integration strategy

BY STANLEY GIBSON
CW STAFF

Digital Equipment Corp's massive desktop announcement tomorrow will be the coming-out party for Decwindows, the cornerstone of an integration strategy that DEC hopes will carry it to the No. 1 position in the workstation market.

Decwindows is part of a larger connectivity concept under which DEC hopes to glue together disparate operating systems in a seamless environment. The concept is analogous to IBM's Systems Application Architecture (SAA).

It was unclear last week when DEC plans to unveil the full connectivity scheme, known as Applications Integration Architecture (AIA).

"AIA is an antidote to SAA. Its advantage is that it includes Unix," said Terry Shannon, director of the DEC Advisory Service at International Data Corp., a market research firm in Framingham, Mass. IBM has made it clear that its SAA and Unix offerings will remain separate.

"The Decwindows-AIA strategy will enable DEC to sell into new accounts by integrating non-DEC personal computers and workstations. In such accounts, DEC will own the network, and the vendor who owns the network controls the account," Shannon said, summarizing DEC's strategy.

Even though Decwindows quietly began shipping in December with DEC Ultrix 32 Version 3.0, DEC will make its formal announcement of the offering tomorrow, complete with pricing and availability.

Triple whammy

DEC will add Decwindows to VMS Version 5 in a new release and will announce Decwindows for Microsoft Corp. MS-DOS, which will be offered with DEC's Tandy Corp.-made PCs. Thus, Decwindows will run on all three operating systems for which DEC is announcing hardware: MS-DOS, Ultrix and VMS.

But while DEC is embracing MS-DOS and Unix on the desk top, Apple Computer, Inc.'s Macintosh, which apparently had a key role in DEC's desktop strategy last year, is going to be absent from tomorrow's festivities, DEC officials confirmed.

One reason for its absence could be that Macintosh windowing is different from Decwindows, although Shannon claimed that DEC engineers have had Decwindows running on a Macintosh for six months.

At the announcement, DEC will showcase some 80 developers who have been working on applications that use Decwindows. About 20 applications will be ready to ship immediately, DEC Vice-President Peter Smith said.

Decwindows will also reflect the glory of the Open Software Foundation's recent selection of the Decwindows tool kit for development in its Graphical User Interface for its OSF 1.

DEC's game plan

In a briefing last week, DEC officials offered some insights into various software strategies, including the following:

- The announcement tomorrow includes an MS-DOS compatibility software package for VMS intended mainly for the Vaxstation 3100 (PVAX). The package will allow MS-DOS to run under VMS in multitasking mode.
- DEC will "program-announce" All-In-1 with Decwindows. That is, it will not announce pricing and availability right away but will say that work is being done to build an All-In-1 version with a Decwindows interface.
- DEC is changing its attitude about Unix. The new approach is to "just say yes. If people ask for Unix, we say yes," said Don McInnis, DEC vice-president. Previously, DEC pushed VMS.
- Symmetrical multiprocessing will not be announced with Ultrix next week. How soon DEC will announce symmetrical multiprocessing with Ultrix "depends somewhat on OSF developments," McInnis said, although he claimed DEC's strategy is not tied to what the OSF does.
- Over time, DEC will bring Decwindows to an IBM Presentation Manager look and feel, following the OSF's lead.
- OS/2 will not be offered right away with the PC products. That would be contingent on bringing Decwindows to OS/2. MS-DOS 3.3, rather than OS/2, will be sold with the DEC PCs.
- The unsophisticated user will be able to bring up VMS on a workstation and manage it using icons.
- A version of VMS with Posix compliance in kernel mode is reportedly coming, although no more specifics were offered.

STANLEY GIBSON

DEC

CONTINUED FROM PAGE 1

brows is code-named PMAX. The machine is a high-performance technical workstation based on Mips Computer Systems, Inc.'s R2000 reduced instruction set computing microprocessor, making it DEC's first significant product since Rainbow to use a non-DEC CPU.

The PMAX is expected to process 10 "VAX units of performance," or VUP (a VUP equals approximately one MIPS), making it a challenger to Sun's Sun-4/260 workstation. The machine could also significantly undercut the Sun-4/260's price tag, which has a base price of nearly $40,000. Terry Shannon, director of Framingham, Mass.-based International Data Corp.'s (IDC) DEC Advisory Service, said, "it would not surprise me to see DEC offer RISC MIPS at $1,000 a piece.

Halt the exodus

Steve Blank, a cofounder of Mips Computer Systems who now heads the marketing department at Ardent Computer Corp., said DEC's inclusion of the R2000 could bite into the market share of workstation makers such as Prime Computer, Inc. and Silicon Graphics, Inc. Blank said these vendors have been "fighting over the dead bodies of Microvaxes and VAXs. DEC customers could put up with DEC's lousy performance for only so long, then they looked elsewhere. I think this could stop that sort of attrition."

The PMAX will run only DEC's Ultrix operating system, rather than its VMS.

Another key hardware cog will be a relabeled Tandy Corp. personal computer that is likely to use Microsoft Corp.'s MS-DOS operating system and Intel Corp.'s 80286 and 80386 microprocessors. The 80386-based model will also support OS/2.

The release of this PC will also signal the eventual phasing out of the Vaxmate and Vaxstation 2000, a DEC official indicated. "Over time, both will be replaced by the new products," said Pete Smith, vice-president of DEC product marketing, at a recent briefing. Some analysts predicted the phaseout could begin this fall.

Heading the list of internally developed products will be the PVAX, a low-end commercial workstation based on DEC's CVAX processor that will run approximately 2.4 VUPs. The VMS and an Ultrix-based machine will be the first DEC workstation to incorporate 3½-in. peripherals and is expected to compete with the Sun-3/60 workstation.

Also arriving will be the Firefox machine, DEC's second-generation mid-range workstation. The two-processor Vaxstation 3520 and four-processor Vaxstation 3540 will offer approximately 5 and 10 VUPs, respectively. While it is expected to be a VMS-only machine at announcement time, Ultrix symmetrical multiprocessing support is likely to be forthcoming. A diskless model is also expected.

DEC will also promote a series of software products intended to tie into an announced connectivity scheme called Applications Integration Architecture, an umbrella name for adjuncts to heterogeneous systems, and Decwindows (see story above).

All the products are scheduled to be available within three months and are predicted to favorably impact the third and fourth quarters of DEC's fiscal year.

Although the amount of product introductions could take users aback, some analysts said they think the scope is appropriate. "Once a customer goes to another supplier to buy something, you never know what their next move will be," said Jay Stevens, an analyst at Dean Witter Reynolds, an investment firm in New York. "They should have done [the announcement] years ago."

Another burning question DEC must face is whether the products come too late to sway firmly entrenched workstation users. Both Sun and Apollo already enjoy significant market share and customer loyalty.

"I think DEC is wielding a sharp sword here, but it better be careful it doesn't cut off its own foot," said Bob Hambrecht, a senior technology analyst at Hambrecht & Quist. "You have to be very careful when you start competing with someone by copying him."

But even entrenched products can be dug up. "If they're good products, we don't care how late they are getting to market," said Dean Allen, vice-president for information services at Lockheed Corp. in Calabasas, Calif. "Right now, we've got all types of workstations, but if the new DEC machines give us the kind of price/performance we're looking for and we can put it into our environment transparently, we're going to do that."

The Vaxmate *was a sales disaster DEC hopes not to repeat*

A further curve could be thrown DEC's way by Sun and IBM. Sun is due out with a low-end system, based on its Scalable Processor Architecture, that will clock in at about 7 MIPS and could cost less than $10,000, said Vicki Brown, director of systems research at IDC, while rumors have been circulating that IBM will release a high-performance version of its Personal Computer RT workstation.

Senior Editor Rosemary Hamilton contributed to this report.

Advancing forces

Intending to raise the competitive stakes in the battle for the desk top, DEC is expected to announce a broad range of workstation products next week

Reported codenames (unreported product names)	Expected features
Firefox (Vaxstation 3520, 3540)	• Based on Vax 6200 multiprocessor series • VMS • Successor to Vaxstation/GPX II • 2- or 4-processor configurations • Estimated 6 or 11 MIPS
PMAX (Decstation 3100)	• Based on Mips Computer Systems' RISC-based multiprocessor • Ultrix-only • Estimated 10+ MIPS
PVAX (Vaxstation 3100)	• Based on Microvax 3000 microprocessor series • Ultrix, VMS or MS-DOS emulation
Shackmate (Decstation 210, 316, 320)	• Based on Tandy's Intel-based 80286 and 80386 microcomputers • MS/DOS

CW CHART

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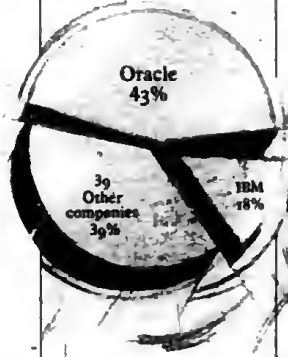

Oracle is more than twice as large as its closest competitor. (Source: Donaldson, Lufkin & Jenrette Action Recommendation, July 18, 1988)

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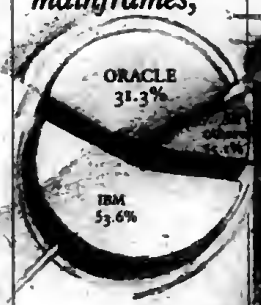

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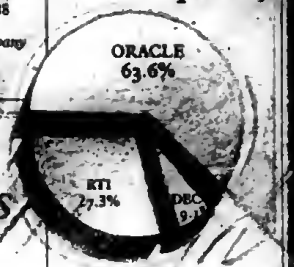
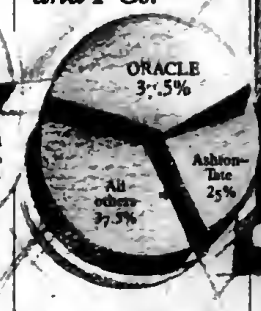


and PCs?



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2 *System 2000* • Computer Associates
3 *Adabas & Natural* • Software AG
4 *Model 204* • CCA
5 *RDB* • DEC
6 *Ingres* • RTI
7 *Focus* • IBI
8 *Unify* • Unify
9 *Nomad2* • Must Software
10 *Supra* • Cincom
11 *Access DB* • ADR
12 *Ramis* • On Line Software
13 *Easytrieve* • Pansophic
14 *IDMS R* • Cullinet
15 *VAX DBMS* • DEC
16 *Informix SQL*
17 *SQL/DS* • IBM
18 *Inquire* • Infodata Systems
19 *Mantis & Ultra* • Cincom Systems
20 *System 2000* • SAS
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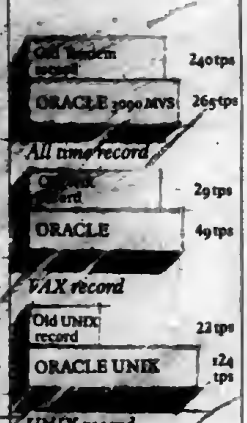

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UK bank invests in AS/400s

Spends $20M, also procures PS/2s, Citicorp banking software

HFC Bank PLC in London is forking over $20 million to IBM and Citicorp Information Resources for a banking system based on 190 IBM Application System/400s and 1,500 IBM Personal System/2s.

The joint sale by IBM and Citicorp was announced last week. By 1990, HFC said it expects to have implemented the AS/400-based network, which will run the Citicorp Comprehensive Banking System.

While this is not the largest single sale of AS/400s, it is the largest sale of the mid-ranges intended for a single private network, an IBM spokesman said.

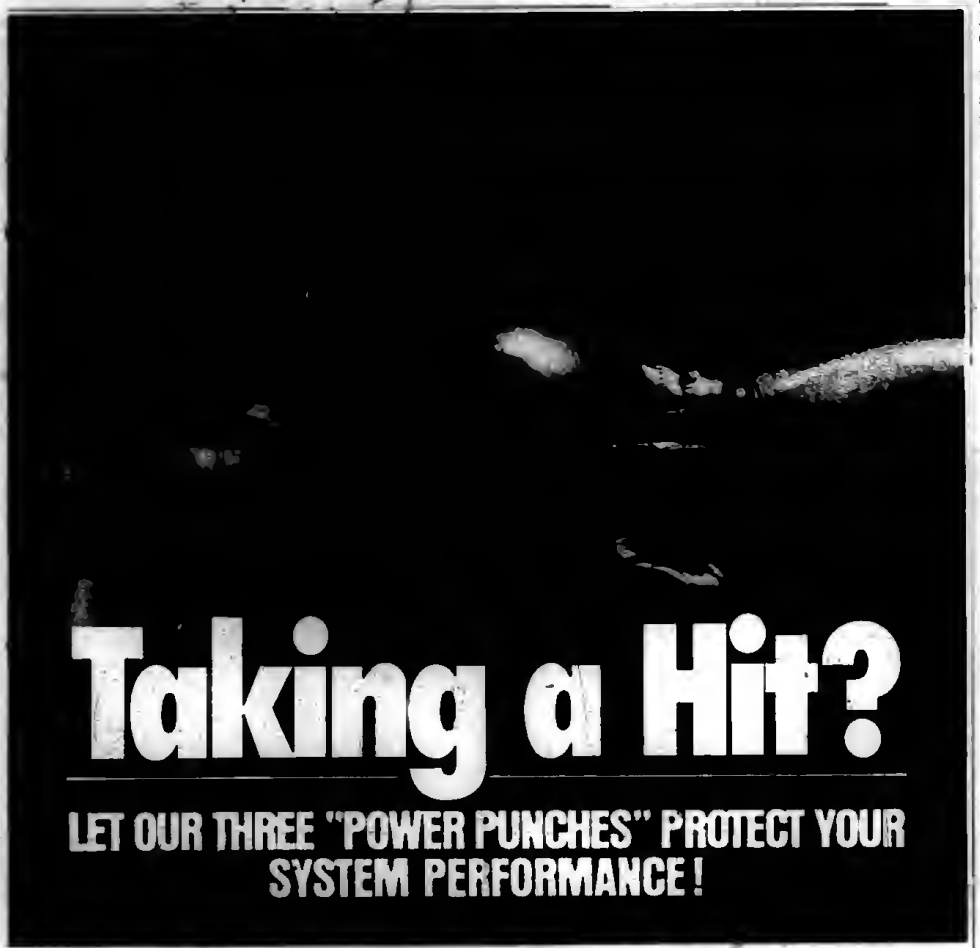
The distributed system will replace an aging IBM mainframe system that ran banking software designed by HFC. According to a published statement, the bank will scrap its batch-oriented software and remove the mainframe to make way for the AS/400s.

HFC conducted a two-year study of banking systems and tested the Citicorp banking software before signing the contract, the companies said.

The system is part of HFC's strategy called Project 90, an aggressive plan to increase its customer base from the current 300,000 to one million accounts during the next several years.

The goal is to have a PS/2 for nearly every bank employee who deals directly with customers. The PS/2s will be linked to the AS/400s, which will be located in the bank's 172 branch offices in the UK. The Citicorp software was recently tailored to take advantage of the AS/400 architecture, Citicorp said. The heart of the system is a database called Common File, from which all the banking applications run.

Citicorp will set up a link for diagnostic purposes from its headquarters in Orlando, Fla., to HFC facilities in Windsor and Birmingham, England.



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HP, DEC will try to tarnish AS/400 shine

BY ROBERT MORAN
CW STAFF

IBM's Application System/400 has been wildly successful, with users buying the machines as fast as they can be built. But opinions differ on whether the honeymoon will extend past midyear, when the mid-range offering will face its first taste of real competition from rivals Digital Equipment Corp. and Hewlett-Packard Co.

According to a study done by ADM, Inc. in Cheshire, Conn., IBM sold 32,000 systems in 1988. Those sales translate into approximately $5 billion in revenue, with nearly half that amount derived from the European market. Worldwide AS/400 installations are projected to increase to 98,000 in 1990 and 125,000 in 1991.

ADM predicts a good 1989 for the AS/400. The firm justified this prediction by citing the continued pent-up demand within the IBM System/36 and 38 marketplace, the refinement of U.S. sales channels and the completion of the 1988 sales cycle for organizations that began looking at the system during the latter half of last year.

Not so flowery

But not everyone sees such a rosy picture for the IBM system. John Logan, executive vice-president of the Aberdeen Group in Boston, claimed that by midyear, IBM will be forced to engage in a toe-to-toe battle with HP's Spectrum 9000 series and DEC's symmetric multiprocessing machines.

According to Logan, such contests will result in a leveling off of AS/400 sales, largely because the machine has a relatively poor reputation for performance, specifically when called on to run two or more applications.

"When the industry moves toward comparative analysis based on application solutions and price/performance, the AS/400 will find itself on shakier ground," Logan said.

However, ADM President David Andrews said he believes that once the pent-up demand falls off, power boosts to the AS/400 for both the larger and smaller models will keep sales moving.

This year, Andrews said, IBM will add functionality to allow the AS/400 to serve as a control point for intelligent workstations; in 1990, IBM will bring artificial intelligence, voice and data integration and image processing to the platforms.

Logan attributed the success of the AS/400 at least in part to timing. He said the industry is experiencing a turnover in mid-range computers that were purchased in 1984 and are now outdated in office functionality and not worth maintaining.

The first replacements affect the old IBM System/34, 36 and 38 as well as the DOS/VSE marketplace. According to Andrews, at least half the DOS/VSE users will migrate to the AS/400 because rewriting an application on the AS/400 is less expensive than porting it to the MVS operating system.

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We, at Software Engineering of America, have created this letter at the request of a large number of mainframe users. In light of all the turmoil brought about by the current spate of mergers and acquisitions, many of you have told us that you are interested in the plans and intentions of the companies with which you do business. Since one of our main goals is keeping in tune with the concerns of the user community, we are more than willing to comply.

SEA was founded in February 1982 by a group of professionals with a long history of involvement in the computer industry. The founders brought with them a broad range of expertise in the development and support of high-quality software systems, obtained through experience in industry, government and leading software companies.

The principles upon which SEA was founded are the following:

- To produce a diverse line of integrated system software products, developed and enhanced based on user requirements.
- To provide first-rate support for those products-24 hours a day,7 days a week.

Strict adherence to these very basic principles have propelled SEA from a 1982 startup to our current position of over 6000 licensed users in more than 40 countries. With a consistent ranking in Software Magazine's "Top 50 Independent Software Vendors", SEA has emerged as a leader in the systems software market.

SEA PRODUCT GROUPS

Operations Management

SEA provides a complete line of operations management solutions covering all critical areas, including job scheduling, master console management, report archival, report management and distribution, JCL checking and management, message management, and the complete viewing, archival and retrieval of all types of Sysout and Syslog.

We are the only company that provides such a complete line of operations management software, backed-up by first-rate technical support. With over 2,500 users choosing SEA as their single source for operations management software, SEA has assumed a position of leadership in the field. Many users tell us the reason they have selected our products is superior support, as well as our integrated approach to long term product development.

DASD/Data Management

SEA's DASD/Data Management tools have become corporate standards, used in one out of every five MVS data centers worldwide.

Providing solutions for high-speed storage management, PDS dataset management, sequential dataset management, and VSAM control and optimization, SEA has set a new standard for efficiency and high performance in DASD and data management software.

SUPPORT AND DEVELOPMENT

SEA's Technical Support Department is divided into two levels. First-level support fields all initial contacts. While over 85% of all contacts are resolved on the initial call, if first-level support is unable to provide a solution, the call is transferred to second-level support. All second-level support personnel are members of Product Development Teams. While most calls are solved at the first-level, involvement with technical support keeps SEA developers in greater touch with our users. This procedure enables our developers to respond more effectively to the needs of the user community.

SEA's approach to development is to keep Product Development Teams together, working on specific products for the long term. We have found that this approach generates a high level of dedication and expertise. We believe that this methodology is the reason SEA has received such consistently high ratings from our users, for technical support and product development.

COMPANY ORGANIZATION

SEA is a privately held company, whose growth over the years has been internally funded by product sales. Our users have indicated that they prefer us to remain independent. This independence guarantees our ability to continue to provide the highest standard of product support and development currently available.

Software Engineering of America is proud to supply the mainframe user community with the above information about our company. We would also like to take the opportunity to express our appreciation for the support that we receive from over 6000 users worldwide. In return, we shall continue to deliver to our users, the highest level of dedication and support available in the industry.

If you are currently not an SEA user, we invite you to take a free, no-obligation trial of our products. We are certain you will find, as thousands of others have, that our products will provide cost-effective solutions to your installation's needs.

Thank you,
Software Engineering of America, Inc.

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International Offices
Neubruckestraße 30 • 4400 Münster • West Germany • Tel. (0251) 54447 • 42569
88A Searle Street • Cambridge / Cambs. CB4 3DD • England • Telephone: (0223) 312147 / 350910

DB2 information-sharing group formed

BY JEAN S. BOZMAN
CW STAFF

CHICAGO — A nationwide DB2 users group was incorporated here late last month in an effort to share information about IBM's relational database management system that is being gathered separately by more than 25 DB2 users groups throughout North America.

Called the International DB2 Users Group (IDUG), the group's first aim is to hold a conference here in August. The group is overseen by the Chicago firm of Smith, Bucklin & Associates, which already organizes the Guide International Corp. and Share IBM users group meetings. But organizers say IDUG will not supersede existing DB2 users groups — or even DB2 user committees within Guide and Share.

"We're not going to try to submit DB2 requirements to IBM like Share and Guide do," said IDUG President Bill Backs, who is also director of information technology at Scott, Foresman & Co. here. "They're very good at submitting DB2 product requirements, and we don't want to dilute that role."

Instead, IDUG intends to give DB2 users and software vendors a single organization through which they can share DB2-specific information. "We're trying to form an organization that encompasses all the people connected with DB2," Backs said. "We are by no means trying to preempt the regional groups — but we would like to facilitate communications between them."

DB2 users groups have sprung up independently in all parts of the country since IBM introduced DB2 in 1985. The largest of these groups meet in New York, Chicago, Los Angeles, San Francisco, St. Louis and Toronto, and most draw 150 to 300 attendees per meeting.

All are welcome

IDUG will be managed by and for users, but vendors of DB2-related products and utilities are invited to join. "We want to acknowledge that vendors have a place in the user community," Backs said. "However, we're establishing a separate membership category for vendor members and limiting vendors to two of eight seats on the IDUG board of directors."

Two Chicago-area DB2 vendors, Platinum Technologies and Peat Marwick Advanced Technology, gave IDUG approximately $30,000 in start-up funds, Backs acknowledged. But software vendors, as well as users of IBM-compatible mainframes, have traditionally been unable to attend Guide and Share meetings, Backs said, because neither group could claim to own an IBM mainframe.

Leaders of regional DB2 groups seemed surprised by the creation of IDUG but are interested in learning more about it. "I'm taking a wait-and-see attitude," said Joyce Bischoff, chairman of the Delaware Valley DB2 Users Group in Philadelphia. "I'm in favor of good communications at any time, but up to now I've thought that Guide and Share were the ideal places to exchange DB2-specific knowledge."

Others were optimistic. "If IDUG gets off the ground, it'll be of great benefit to the user community," said Bruce Gallagher, president of the Greater New York DB2 Users Group. "And if IBM sees that IDUG represents its DB2 customer base, there is even the possibility for leverage with IBM."

The next few months should determine whether the concept of pulling together a single DB2 forum in the U.S. and Canada will work. IDUG plans to complete its mailing to 10,000 DB2 users this month. Fees from the summer conference would, in part, keep IDUG rolling into 1990.

SCIENCE/SCOPE®

A spacecraft that was sent to explore the planet Venus for eight months completed its first decade of space service. The Hughes Aircraft Company-built Pioneer Venus Orbiter was originally slated to circle the planet for one complete Venus rotation, approximately 243 Earth days, and provide the first topographic maps of the planet. However, its unexpected longevity has given scientists detailed information not only about Venus but also about comets that have streaked within sight of the probe. Despite its 10 years, the orbiter shows little sign of wear and is expected to operate for another four years until its fuel runs out.

Revolutionary computer architectures have the potential to achieve massive parallel processing capabilities beyond that of the fastest conventional supercomputers. Under development by Hughes for the U.S. Army Strategic Defense Command, these new architectures are designed to mimic the brain's vastly complex neurobiological structure. Using this technology, a new generation of computers may provide the solution for real-time processing problems like automatic target recognition, weapons allocation, automatic speaker identification and multi-sensor data fusion.

A new superprojector provides large-screen display of computer data in full color. Designated Model 1000, the projector is designed for applications where real-time computer information must be viewed by large numbers of people. High-intensity xenon arc lamps, combined with the Hughes-developed liquid crystal light valve, generate a display with resolution in excess of 1,000 TV lines. Data is seen crisply and clearly, through front or rear projection, in normal room light. The superprojector is compatible with virtually all currently available computer sources and is derived from sophisticated color projection systems developed by Hughes for military command and control centers.

A seven percent increase in the production of oil from the giant Norwegian Oseberg field is the goal behind Norsk Hydro's Troll-Oseberg Gas Injection (TOGI) Project. Engineers will inject gas from the huge Troll Field into Oseberg to help maintain pressure in the reservoir as oil is taken out. At its center, TOGI has a five-well subsea template/manifold system, 305 meters deep, linked by pipeline and electro-hydraulic umbilical to the Oseberg "A" platform over 30 miles away, nearly three times the distance of existing subsea controls. The electro-hydraulic control system uses sophisticated surface and subsea electronics developed by Hughes. The system integrator is Vetco Gray Inc.

Engineers and scientists are eligible for approximately 100 Hughes Fellowships awarded for the pursuit of Master's and doctoral studies in Engineering and Science. All Fellows work full-time at Hughes during the summer, with Work-Study Fellows working part-time during the academic year and Full-Study Fellows attending classes full-time. Fellows receive full academic expenses plus stipends for studies at approved universities. Additionally, Hughes offers a two-year, entry-level rotation program that enables qualified BS and MS graduates to diversify their engineering experience. For more information contact the Hughes Corporate Fellowship Office, Dept. S3, C1/B168, P.O. Box 45066, Los Angeles, CA 90045-0066. U.S. citizenship may be required. Equal Opportunity Employer.

For more information write to: P.O. Box 45066, Los Angeles, CA 90045-0066

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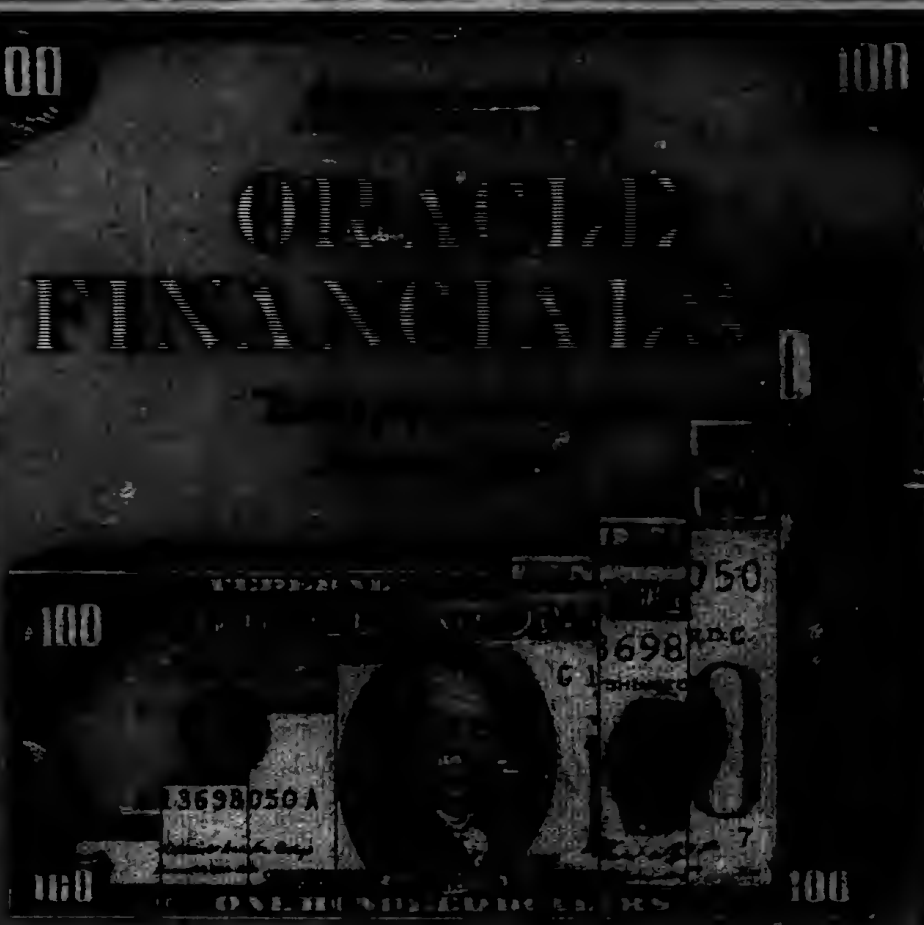

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INTERVIEW

A view from the top

With thinned management ranks, less hubris and the secret weapon — SAA — John Akers points IBM toward the 1990s, ever mindful of the mine fields that await the giant

When John F. Akers became chief executive officer of IBM in 1985, the world's most profitable corporation saw a bright future ahead. The 3090 was ushering in a lucrative mainframe product cycle, the IBM Personal Computer was king of the desk top, and IBM had ambitious plans to battle AT&T for worldwide communications supremacy. Most ambitious of all, IBM said the heady goal of $100 billion in annual revenue was attainable by 1990.

Within one year, however, Akers faced a much more humbling challenge — how to restore year-to-year growth in profits. After IBM's first two consecutive years of earnings declines since the Great Depression, Akers achieved that goal in 1987 and will again in 1988 — although profits will still be below their 1984 peak.

Akers implemented some of the most sweeping internal changes in IBM's history, including s net work-force reduction, without layoffs, of sbout 16,000 employees since 1985.

In an exclusive interview with Senior Editor Clinton Wilder and Editor in Chief Bill Laberis last month at IBM's Armonk, N.Y., corporate headquarters, Akers spoke candidly about IBM's overdue reorganization, his feelings about Japan's MIS philosophy and IBM's software and telecommunications strategies to serve distributed IS organizations.

The cost cuts and redeployments of the past three years were necessitated by what would appear to be a bloated middle management structure. How did things get to that point, and what lessons has IBM learned?

For 75 years — certainly for the past 25 — IBM has had a remarkable performance in business success. That success tends to have a management team not want to tamper with what's in place. As that success began to diminish a bit in the last three or four years, it's an swful lot easier to gain the attention of the management team and all the people.

What had to happen for this enterprise is to have reality come in and hit us on the head. Reality has hit us on the head, and we say, "What does it take to be competitive, to get growth going again, to have the return on investment that we want to have?" But it takes that cold shower before you come to work in the morning to get your blood going. And our blood is going.

ANDY FREEBERG

"WE'RE A more humble IBM, with more of a desire to participate with our customers, have them come into our facilities, review our plans and programs."

In comparing the MIS market with what it was 10 to 15 years ago, is it fair to say customer loyalty isn't what it once was?

Well, there are an awful lot more customers. When I grew up as a salesman with IBM in the '60s, we used to have one or two customers per enterprise. Today, there are thousands. There's a much broader constituency to try to satisfy, and there's a much broader array of competitors trying to do exactly the same thing. The race is getting swifter.

At *Computerworld*, we see a less hierarchical distribution of power in information systems networks. How do you look at the MIS chief as this evolution is taking place? How is IBM relating to that individual or office?

Well, I think that job is getting s whole lot harder. There are three or four pressures on that individual that are very tough.

The top management of American industry is constantly asking whether or not they're getting their return on their investment in information systems. That office has to help answer that question, and we have to help as well.

Secondly, because more people are involved in the enterprise, the job becomes not deciding what to do and doing it — but deciding what to do and then trying to get everybody into that same boat. There'a a lot of persuasion that has to go on, and that's very tough.

The third major pressure, particularly in enlightened business enterprises, is that competition, for our customers, is as tough as it is for us. Information systems, appropriately applied and implemented, can be s competitive weapon.

The role the IS manager should be playing is more central to the operations of the business.

Absolutely. It wasn't so long sgo that you had to be technically competent and deliver what you promised. Those days are gone. You have to be an advocate for and implementer of systems scross enterprises that really impact the competitiveness of the enterprise. That's s big job.

What challenge does that pose to IBM to serve that IS manager? How does IBM respond?

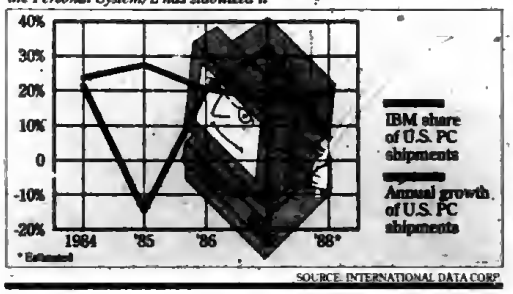
In two major ways. First of all, we have created a sales and support organization around the world that increasingly understands our customers' businesses and business problems. We'd like to have the IBM team viewed as a plus in the discussion of the business problems. Technical competence, in and of itself, won't carry the day at all.

The second thing is, we're spending more of our development money on solutions. There are s lot of questions about IBM bejng a hardware business or s mainframe business, but you'll find an increasing percentage of development resources going into solutions. The operation in the U.S., leading it on a worldwide basis under Ned Lautenbach, has very aggressive budget increases.

What do you mean specifically by more development effort into solutions? Is it more vertically oriented applications? Is it mainframe-oriented?

Challenge of the clones

IBM's personal computer market share dropped 10 points by 1987, but the Personal System/2 has stabilized it



SOURCE: INTERNATIONAL DATA CORP.

It means that if you were to walk into Ned Lautenbach's conference room, you would find him conducting meetings on what are the top opportunities for information systems, industry by industry. What are the ingredients necessary to provide that set of solutions to the marketplace? Some of them will be 370, some will be AS/400, some will be PS/2, and some will be all of the above. When SAA gets fleshed out a bit more, it will go across all three.

When you make significant internal changes, as you have done, that can be painful. Do you feel that the company is over the worst of the adjustments that it needs to make internally?

The vast majority of organizational and management changes are in place. You don't organizationally change a business as large as this one, as much as we have, without creating some disruption. There's been a feeling on the part of IBM people that we're on the right track — and then schizophrenia about more change vs. "let us absorb what's already in place."

Were there fundamental shifts in demand or market conditions that caused IBM to reassess its approach?

I don't think they were fundamental changes, other than the continuing changes toward easier-to-use, lower priced computers and a plethora of workstations and networking. But I think all of us in the industry understood that that was going on.

What IBM needed to do better was to be closer and more in concert with our customers. We needed to have a better product line, and we needed to be more efficient.

I meet with customers very often, all around the world, and all of them say there is a new and different IBM. That doesn't mean it's a perfect IBM; it's a new and different and improving IBM, and that's gratifying. We're a more humble IBM, with more of a desire to participate with our customers, have them come into our facilities, review our plans and programs.

You have spoken out strongly in the past about IBM's need to protect its intellectual property. How do you feel, on a gut level, about the recent arbitration decision granting Fujitsu restricted access to IBM source code? Are you comfortable with it?

I'm comfortable with the conclusion.

What do you think is the proper role for the U.S. government in trade? What would you like to see more of from the incoming administration?

The actions that have been taken by the Reagan administration have been terrific. I would say it should be a continuation of the same. In the final analysis, what the world needs is open markets and open trade.

What are two or three technologies that you think will have the most impact on your largest customers, and *Computerworld* readers, in the next five to 10 years?

I would say Systems Application Architecture is one. I'm not being facetious. If you ask the pros in computing what they'd like to do that they can't do today, what they need is productivity enhancements in software development, continuity in terms of people dealing with computers and screens, and enhanced connectivity. That is precisely what we're trying to give them.

Doing more with less

Akers' work force reductions have paid off in increased efficiency during the last two years

SOURCE: IBM
CW CHART

Beyond that, I would expect that some of things going in image processing [will have a large impact]. I went down to USAA Insurance in San Antonio to see what's going to happen there when they take the 25 million letters they get every year and eliminate all the paper; it's very exciting. And it's not just the people dealing with the paper that will be impacted, it's the management and executive management, who wax eloquent about the competitiveness of their enterprise.

Perhaps expert systems will have a bigger impact, too.

Does Wall Street adequately understand what it means to change a company as large as IBM in a rapidly changing industry?

I think there is a tremendous desire for short-term performance in U.S. markets. The short-term performance of IBM in 1987 and 1988 has been satisfactory. I think what Wall Street would like to see is a continuation of what the trends have been.

How do you deal with the conflict between Wall Street's desire for short-term results and a company's long-term plans, some of which may take years to bear fruit?

Every company in the U.S. has that conflict. We manage the business for the long haul. We're not simply a fab-and-assembly hardware business that picks technology off the shelf. We invest in our semiconductor facilities, and those paybacks aren't for five to seven years.

I think the software strategy that we're on, embodied by SAA, is long-term — you can't do those things in a very short time. If we didn't have that strategy, we'd be sitting around in task forces trying to figure out how to put that strategy into place.

It's in place now, and it's not all *manana* — you can touch and feel pieces of that software strategy that are in our customers' offices.

So we try to balance the need for tactical performance improvement, but practically speaking, this business has to be managed for the long term — and it is.

If you think back four or five years before you became CEO, what turned out to be different from what you expected?

It's been much more challenging than I would ever have thought. The requirements for IBM to change and the changes that are ongoing are probably as significant as any in the history of the enterprise. I think that in the early 1980s, for a time, the business enjoyed enhanced success over the prior five to eight years; that tended to suggest the business was in good shape and would continue to be so. And that clearly has not been the case.

So I think that the cold light of day is upon us; we understand what we have to do, and we're working hard at it.

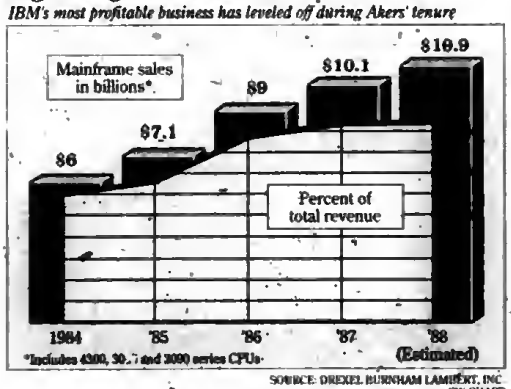
If you could put IBM's 500 largest customers in one room, what would you want to tell them about the IBM of the 1990s?

I would like to tell them that we really are working every day to try to have a set of delighted customers. The IBM of yesterday, which was a bit too reserved, played its cards too close to the vest, wasn't as approachable as people would have liked, is really an IBM of yesterday.

I would like to have an IBM emerge over the next several years that is sincerely approachable, that is-responsive, that is open, that has a sense of humor, that doesn't take itself as seriously as perhaps it did in the past, that really is an enterprise dedicated to add value to a customer's operation. That's what I'd like to tell them: Keep watching this space.

High-end growth stalled

IBM's most profitable business has leveled off during Akers' tenure



SOURCE: DREXEL BURNHAM LAMBERT, INC.
CW CHART

Akers on Japan

The Japanese competitive edge usually evolves images of mass-produced CD players or memory chips. But to IBM Chairman John Akers, the edge also exists in the strategic use of computer technology.

"There's no question in the minds of Japanese management about the necessity to have effective, efficient, aggressive IS strategies," Akers said. "There is less commitment in the U.S., and I think that's a problem.

"That's another pressure on the IS manager, because there's an educational requirement that's necessitated by that lack of commitment," Akers added. "Non-American managements are more tuned up on this subject."

The telecom front

The most eloquent, IBM's telecommunications strategy for the past four years has been marked by fits and starts, with various investments in telecom providers being sold off or traded back. Not so, says John Akers.

He insisted that IBM's merger with MCI Communications Corp. was probably a financial investment and that the recent sale of stock in Siemens AG does not signify lack confidence on the U.S. private branch exchange market.

"We continue to want to aggressively sell PBXs in the U.S., and I think we can," he said. "Siemens brings relationships and a customer base in Europe, communications strengths that we don't have. We're putting this business together to use their strengths and ours; we've got it for the long term with them."

No managers

FROM PAGE 1

a project" or share an idea with the group, Jones said. Cooperation of all employees is needed for success, said Mike Bussey, a coach facilitator for the premiere self-managed group. "Some people say, 'All I want to do is my job; I don't want to manage myself or anybody else.' Others are gung ho about it; they think this is an opportunity to change the system."

Chuck Gibson, senior vice-president at Cambridge, Mass.-based consulting firm Index Group, Inc., said participants must be willing to put in the kinds of hours managers might more typically work. "There is a lot of emotional involvement and peer pressure in getting things done," he said.

Dual roles

To the upper echelon McDonnell Douglas managers, Bussey and his co-worker Betty Houchins are first-line managers of the 25-member Master Savings System (MSS) area. However, within the MSS, they are now considered members holding a coach facilitator role. The MSS maintains the corporate savings system activities, such as profit sharing. The group's mandate is to study its own functional area to find where and how it can be improved.

"The whole team is going to receive recognition for the work it achieves — not just me, not just Betty, but the whole team," Bussey said.

The facilitators estimated that the group has spent close to a man-year in hours on the project since August. "If you approach this with the idea of gaining immediate results, you're going to cause yourself frustration," Houchins said, adding that it could take up to two years to fully implement the plan as she envisions it.

Bussey said he thought the MSS area was a logical department in which to kick off the program because its employees had always worked as a team; he soon realized that his sense of team spirit was a bit naive. "There was always this silo effect of 'We're in charge and we'll let you know what has to be done,' " Bussey said.

The team spirit has been improving with time, however, Bussey said. A recent request by the auditing department, he said, is proof; six people volunteered to do the work. "Natural leaders emerge who will volunteer to do all of the coordinating. The team solidifies by itself," he said. In some cases, a group decision will not be as quick as a manager's, Bussey added, "but it may be a better decision."

The work groups planned for McDonnell Douglas are based in part on theories found in The Tom Peters Group's "Leadership Alliance" videotape program as well as the Japanese theory of Kaizan (which means continuous improvement). But theories alone do not make the idea work; what does make them work is support from supervisory personnel who must be willing to give up certain levels of responsibility and authority to the group, Jones said. While he added that he has heard no resistance to the plan, Jones said he suspects the transition to the work groups will be easier for younger managers than those who are solidly set in their ways.

McDonnell Douglas' Jones

At first, many of the participants in the work group had trouble adjusting to making their own decisions, Bussey said. "I have to turn to them and say, 'Whose responsibility is it to make the decision?' It is up to me as coach facilitator to try to get people to know that it is not always up to me to make the decisions in the self-managed team," he said.

Team spirit

Once the group had agreed to try the management concept, it started to meet as a team. "The first three meetings were extremely rough," Bussey said. "We first had to define what is a team and what is self-management." The group enlisted the help of a human-relations facilitator who was familiar with the self-managed-team process. Next, the group drafted a list of 21 issues it thought needed to be addressed within the MSS and the total IS organization.

Topics being addressed now include improving work flow, project management, group structure and procedures. One task the project management team studied was status reporting; it discovered this area cost the MSS department $192,000 annually. "We figured that that was a little too much. They're going to look into that further," Bussey said.

Still, Bussey said, the team has set some lofty goals, and things are moving at a slower pace than anticipated. There were many lessons to be learned, including teaching management techniques such as how to hold a proper meeting and how to handle disruptive behavior and conflict management, Bussey said.

So far, Houchins said, the concept has received acceptance from those involved. "I've talked to people and get the impression from everyone that if management decides they don't want to pursue it further, we'll decide how to continue it within our own [MSS] boundaries; they won't want to give up the ability to manage themselves."

Taken to its ultimate, the self-managed work group concept calls for the self-managed groups to also select their own leaders, something that is not likely to take place at McDonnell Douglas any time soon, Jones said.

Oracle 6.0 ships with transaction processing

BY AMY CORTESE
CW STAFF

Oracle Corp. recently shipped the first production copies of its Oracle Version 6.0 with a transaction processing option, although an unbundled release without the option will not be available until midyear.

While the unbundled version will be a free upgrade for maintenance customers, the transaction processing option bears a hefty charge — up to the full price of the database management system for the largest systems.

Some users said they believe the cost is justified by the performance improvements, but others are not so happy with the extra charge. Jim Hintza, vice-president of information systems operation support at Prudential-Bache Securities, Inc., said he would not buy the transaction processing option "for philosophical reasons," including maintenance charges that he claimed are "already incredibly expensive."

Unbundling bundles

It has been unclear what enhancements would actually be included in Version 6.0 without the transaction processing option, because the product has recently been unbundled.

But Peter Tierney, senior vice-president of Oracle's products division, said the upgrade would not include row-level locking or PL/SQL, Oracle's proprietary SQL-based development language.

Down the road

PL/SQL is still in the testing stage and is not included in the first release of the transaction processing option; it will be offered early this year, according to Oracle. PL/SQL code can be inserted into old applications to gain performance increases. However, according to the company, the main benefit of PL/SQL will be in developing new applications. David Hart, executive director of university computing and planning at the University of Houston, said PL/SQL will facilitate applications writing.

The transaction processing option is intended for update-intensive and many-user applications, according to Oracle. Tierney said he expects one third of Oracle's present customers to move to transaction processing during the next year.

Version 6.0 with the transaction processing option is now generally available for most hardware platforms, including Digital Equipment Corp. and Sun Microsystems, Inc. hardware, with an IBM mainframe version and DEC Vaxcluster support expected to be available in April or May.

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AT&T puts Unix at arm's length

BY AMY CORTESE
CW STAFF

AT&T last week took steps to distance its controversial Unix software business from its hardware strategies with the official launch of a new software division, dubbed the Unix Software Operation.

Lawrence Dooling, formerly vice-president of marketing and sales support at AT&T's Data Systems Group, was named president of the new business unit and will report to Robert Kavner, president of the Data Systems Group.

The new business unit will consolidate Unix operations, including Pacific and European Unix divisions, and will be responsible for the development, marketing and licensing of Unix System V software.

In an interview last week, Dooling said his responsibilities will be to maximize the growth of Unix software and revenue generated from it. He said his priority is to be responsive to customers — Unix International and others — and to address some of the criticisms for which AT&T has come under fire.

Kavner first talked about spinning off AT&T's software operations last May, only weeks after taking the reigns of the Data Systems Group. As a supplier of both hardware and operating software that was licensed to other computer manufacturers, AT&T was heavily criticized for its handling and licensing of the Unix operating system.

Has to be different

Dooling said that for Unix System V to take off as a widely used operating system, "Unix licensees have to be assured that it is a separate product available to meet a separate need, distinct from the Data Systems Group."

Unix International, the advisory group of Unix System V licensees, was recently formed to provide input to AT&T on the development and licensing of System V. Dooling said AT&T has been meeting continuously with the group and has started the formal process.

The separate software unit is also likely to minimize protests and appeals against AT&T government contract awards, since the Unix software and support will be identically available to all licensees, Dooling said.

AT&T's Dooling

The Unix Software Operation will include responsibility for System V's graphical user interface, Open Look. The product, jointly developed by AT&T and Sun Microsystems, Inc., was submitted for consideration as the interface for the Open Software Foundation (OSF). However, the OSF's recently announced selection included not Open Look but the Hewlett-Packard Co./Microsoft Corp. Common X Interface combined with Digital Equipment Corp.'s Decwindows.

Dooling said AT&T had made a professional submission in terms of technical, business and legal aspects but that he was not surprised it was not chosen. He also said that AT&T will continue to market Open Look, due this quarter, but would attempt to provide some compatibility with the OSF interface.

However, if a standards body such as X/Open Consortium Ltd. or Posix were to specify an interface as a policy, AT&T would support it along with Open Look, he said.

SEC awards $52M electronic filing contract

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The U.S. Securities and Exchange Commission (SEC) awarded a $52 million contract last week for the EDGAR electronic filing system, ushering in an era in which firms will send financial reports to the SEC in electronic rather than paper formats.

EDGAR, which stands for electronic data gathering, analysis and retrieval, is expected to replace the more than one million pieces of paper the SEC gets from public companies each year.

The SEC awarded its high-profile contract to BDM Corp., a McLean, Va.-based systems integrator, bidding with subcontractors Mead Data Central, Inc., Sorg, Inc. and Bechtel Information Systems.

Many agencies are jumping on the electronic filing bandwagon, allowing companies to submit government-mandated reports, tariffs and taxes via magnetic media or data communications [CW, Sept. 5]. A 1988 government survey showed that 68 federal agencies have an operational electronic filing system, and seven more have pilot programs under way.

In essence, EDGAR has three subsystems:

- Data collection. EDGAR will enable companies (or their financial printers) to make required filings via direct transmission, disk or magnetic tape. Filers will begin using the system in several phases from mid-1990 to 1993, when all filers will be required to use EDGAR.
- Data analysis. EDGAR will help SEC staff members to retrieve and analyze financial reports at workstations. Retrieval software will be developed by Mead Data Central, known for its Lexis and Nexis on-line databases.
- Dissemination. EDGAR data can be viewed by the public and press at terminals located at SEC offices. In addition, Mead Data Central will sell bulk subscriptions to information vendors — either via a real-time feed of EDGAR data or an overnight magnetic tape.

THE CONTRACT AWARD was a coup for Mead Data Central, which will distribute Securities and Exchange Commission information to the public and information resellers under government-regulated pricing terms.

The SEC said its pilot EDGAR system, built by Arthur Andersen & Co. in 1984, has been successful and collected more than 45,000 electronic filings from 525 volunteer companies.

Along the way, however, the pilot system generated a lot of controversy and raised a host of new policy questions. Congress criticized the contract management; information brokers worried about unfair government competition; and bidders balked at the SEC's original financing plan [CW, March 25, 1985].

The contract award was a coup for Mead Data Central, which will distribute SEC information to the public and information resellers under government-regulated pricing terms. In addition, Mead Data Central said it will become one of the first customers of the regulated dissemination service so it can offer a commercial database of SEC filings to investment bankers, lawyers and financial services companies.

In a statement released by Mead Data Central, Jack W. Simpson, president of the Dayton, Ohio-based company, called the SEC contract "a model for the partnership between government agencies and commercial enterprises that will hasten the era of electronic information in the professional sector."

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EDITORIAL

Reality check

THE COLD LIGHT of day is upon us.

That is the way IBM Chairman and Chief Executive Officer John Akers summed up the reality check he and his lieutenants have undergone during the arduous and sometimes painful process of attempting to change some of the most fundamental business practices of the giant company.

In a wide-ranging interview with *Computerworld* (see story page 14), Akers makes it clear that the world to which IBM must respond and act within is far different from the world of just a few short years ago. Competition is measurably more fierce. Customers are decidedly more sophisticated and, therefore, much more demanding. Ultimately, the essence of success is not only keeping up with change but also anticipating it and recasting business strategies to exploit change.

But if you read carefully, you will find that this is not a gauntlet that only IBM must run: It is almost precisely the same treacherous terrain that information systems organizations are coursing right now as we head toward the 1990s.

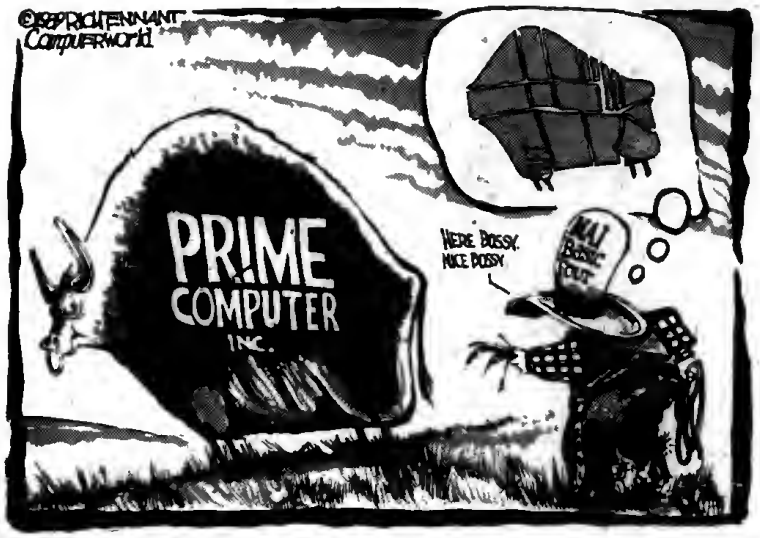
Akers specifically addresses and enumerates these challenges to IS, making the parallels between the IS challenge and the IBM challenge all the clearer. For starters, senior management in U.S. corporations is increasingly demanding accountability from IS. Remember the days when few even dared ask what was up in DP/MIS for fear of getting an answer they wouldn't understand anyway?

Then there is tremendous pressure from the swelling ranks of end users and others involved in the IS planning and implementation process — people who today have to be persuaded, coddled and indulged like a real customer. Whatever happened to the old, impenetrable data processing bureaucracy?

Finally, there is the IS manifest destiny that computer-based systems and networks hold the key to competitive advantage, forming an undeniable link between the performance of the enterprise and the fate of IS management. Wasn't it just yesterday that getting the payroll out on time and pumping out reports was considered a good week's work?

If there is a single word that spells the difference between the information environment of yesterday and that of today and tomorrow, it is *complexity* — both for the bellwether vendor and for IS organizations. Decisions made locally (at the business unit level at IBM, within the discrete IS department at other U.S. companies) today hold ramifications downstream throughout the entire organization. There are more mouths to feed, more hands to hold. Bullying is replaced by persuasion; audacity with tact.

But perhaps most of all, IBM and the IS community have learned the bitter lesson espoused by a magazine editor in the 1950s: Nothing recedes like success.



LETTERS TO THE EDITOR

A little care

Regarding the recent articles about the Internet virus attack, one point that was not mentioned is that the fix to the Sendmail feature that allowed the initial assault was posted to Internet systems administrators more than two years ago.

The fix to this particular problem has been well known for years in the Internet community. I might point out that this security hole has nothing to do with the inherent security or lack of security of the Unix operating system. With careful system administration, Unix can be made as secure as the proprietary systems of other vendors.

Smoot Carl-Mitchell
Managing Partner
Texas Internet Consulting
Austin, Texas

A few small things

We at Vis Information Systems Corp. congratulate *Computerworld* and Bob Moran on your article covering the release of Version 1.2 of our distributed database server, Via/DRE [CW, Nov. 14]. The article was both well-thought-out and well-articulated.

We do wish, however, to point out one or two errors that, while small, could create major misunderstandings. First is the fact that for the 14 months it has been shipping, Via/DRE has had an implicit transaction control that automatically rolls back any single transaction that fails, for whatever reason. The feature that is being added is explicit transaction control that will roll back the entire transaction automatically if any single update fails. That feature is completing final beta testing and will be released within two to three weeks.

Most importantly, we appreciate your attention to the real newsworthiness of a product that provides PC/LAN truly distributed database management today.

P. E. Borkovitz
President
Via Information Systems Corp.
Princeton, N. J.

No surprise

After reading your two articles, "Users lament Lotus delay" and "Add-ons simplify 1-2-3" [CW, Oct. 10], I must say I'm not surprised that Lotus is two years late in coming out with its upgrade of 1-2-3. I believe that Lotus is two years behind because it has been trying to keep its market share by continually reassuring its customers that its product was near completion when it knew the whole time that completion was going to take longer.

Another problem that *Computerworld* pointed out in "Add-ons simplify 1-2-3" is the other add-ons, such as the two that Marq Technologies and Personics Corp. have created, that interface with the Lotus program. By beating Lotus to the punch, companies such as Marq and Personics make the Lotus upgrade even less attractive to consumers who can easily purchase the add-on software. Lotus has proven that it cannot make timely adjustments to the ever-changing software market. It has lost respect as well as consumer patronage and now find its program as well as its upgrade in jeopardy.

As a senior in the Business Management Information Systems Department at the University of Idaho, I feel that Lotus has indeed lost credibility. How about you?

Augustino R. Lucenti
Moscow, Idaho

The time is now

David Baer's article, "Cooperative processing" [CW, Nov. 14] raised many interesting points. However, his conclusion and bias that "... its time has not yet come" is incorrect.

Most major corporations do have underutilized, powerful desktop CPUs. More and more, those personal computers are connected to LANs, minis or mainframes. And more often than not, their larger processors are bursting at the seams or soon will be.

Offloading many of an application's resource-intensive tasks — such as user interface management and basic data validation — to the PC while providing transparent access to a remote, shared data source such as DB2 not only can happen today but is happening today.

Not all companies are ready for cooperative processing, and not all applications are appropriate for a cooperative solution, but many are. Moving ahead with cooperative technology is a very wise and cost-effective business decision.

Abby Pinard
Vice President, Marketing
Must Software International
Notwalk, Conn.

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.*

Justifying your budget and your existence

JOHN KIRKLEY

Just what do you do when you're sitting around the conference table at budget time and one of the senior managers — the one who always taps his gold pen and pulls down the edges of his tight, thin mouth when he encounters a number over $500 — says, "I see MIS is looking for a 15% increase again this year. I'd like to know precisely what we're getting for our money."

The game is called justifying your existence, and it is even harder to play in these unsettled and perilous corporate times. At these sessions, being able to show a correlation between information systems dollars spent and an improvement in the company's fortunes is most desirable.

The game would not have to be played if MIS managers were cutting their budgets in 1989. However, budget trimming is not the trend, reports the Boston-based Index Group. The market research firm received responses from more than 10,000 senior MIS executives to a survey conducted in October. Nearly two-thirds of the respondents said they planned to increase their budgets by an average of 12.8% this year.

Out of 20 concerns rated in the survey, cutting costs ranked No. 14 in the minds of these MIS managers. Yet many were aware that their bosses might not be taking as sanguine a view of IS expenditures. The Index Group's executive summary reported, "While 79% of the IS executives disagreed that their organizations are spending too much on information systems, only 42% said their senior management would similarly disagree."

Those who said their senior managers believe too much is spent on IS almost unanimously stated that management does not understand the real benefits from systems. "They only see the expense side; there isn't enough communications of the value/benefits derived," said the IS chief of a chemicals company unit.

"Systems traditionally don't deliver the same kind of value that other departments do," chimed in the top IS professional at a consumer products company.

Now, put yourself in the place of that cost-conscious senior manager mentioned at the beginning of this piece. There you are, tapping your pen on your IS manager's budget printout, listening to him tell you that systems traditionally do not deliver value as normally measured in other parts of the company. "Just what . . ." you might ask in a low voice tinged with a slight edge of menace, " . . . just what do your systems deliver?"

Playing the field

Deciding to do a little field work of my own, I called up several IS managers and asked how they went about justifying their budget. All had gone through the process many times during their long tenure. At one company, which was still recovering from the aftershocks and debt precipitated by an unsuccessful, unfriendly takeover attempt, the IS manager said that the current lean times had actually made justification very simple.

"We only do things that are absolutely essential to support the company's mission," he said. As a major textile manufacturer, part of that mission is to remain competitive in a global marketplace — "to beat the offshore competition," as he put it. To accomplish this goal, the company has made a substantial IS investment in electronic data interchange (EDI).

"We're reducing the response time from the moment the consumer in the store requests a particular item to the delivery of the finished goods to the retailer," he continued. "These days, in the clothing market, it's not so much quality or cost that makes the difference; it's availability and conforming to trends. This means fast turnaround."

By using EDI, his company has formed a partnership with the other suppliers in the cycle, all the way from the producer of the fibers to the manufacturers of the finished goods and the retailers.

Even prior to the goods' leaving his company's shipping dock, an EDI message is sent to the destination detailing the materials being shipped — color, dye lot number and even the sequence that the bolts of material were packed on the truck. "We support strategic business objectives," the IS manager said. "We help to give our company that critical competitive edge."

Competitiveness was cited by several other managers. But, noted one IS professional at a large manufacturing concern, "justification these days has become a lot harder. It used to be

Continued on page 20

Kirkley is a computer industry writer, editor and consultant based in Warwick, N.Y.

BOB DAEMMRICH

When the virus catches you

HARVEY P. NEWQUIST III

You're safe. The virile virus of 1988 passed you by. You assured both your CFO and COO that your data department is safe. As you lean back in your chair, legs crossed and arms folded behind your head, you even intimate that maybe — just maybe — the whole virus thing is a little overexaggerated.

It is 3:30 a.m. You are sleeping soundly, dreaming of — a ringing phone shatters your sleep. Wondering who besides a prankster would be making calls two hours before dawn, you mumble hello into the phone.

It is your night shift supervisor, the man who oversees the input of transactions from the previous day.

He is nervous. He thinks you better come in real quick, like now. His voice raises a little in pitch and volume. The main computer system has slowed down to a crawl. There's no available memory for any more input. Routines that normally take 30 seconds are averaging 15 minutes.

All this has been going on since 2:00 a.m. He didn't think he should wait any longer to call. He has no idea what the problem is, but he senses it's going to get worse.

At 4:05 a.m., you're standing in the middle of the data center, and no one is working. The night crew can't run any more jobs because all available memory is filled with nonsense data.

Any attempt to get information out of the system just causes a whirring of disk drives for minutes before coming up blank. Blank! Your system is filled to the brim with data, but you can't seem to extract any of it, because something isn't letting it out.

In your optimistic mood — "It can't happen here!" — you determine that there must be something terribly wrong with the system access. Probably just an inocuous little glitch, maybe part of a damaged operating system.

At 5:30 a.m., you are sweating profusely, even though it is cold in here and colder outside. Your system has stopped. Immovable. Frozen. Dead. The computer claims that all disks and memory spaces are full but shows no data files.

Every single record of every single transaction of every single department in the company is stored in those files — accounting, payroll, personnel, sales, inventory and so on. What if those files are damaged? Most are regularly backed up, like accounting, but some . . . well, no use thinking about that yet.

All you can think of now is your little remark to the boss about viruses and exaggeration. This is a virus if you've ever seen one. But, of course, you've never seen one. How many people have?

Visions of data files . . .

At 6:30 a.m., with thoughts of data files vanishing into magnetic oblivion, you call your regular systems maintenance people at home and tell them to get to work, pronto. Your prized MIS department has sat idly for hours. The night shift crew hasn't done anything but stand around the perimeters of the room waiting to go back to work. Most of yesterday's transactions are still stacked up at terminals waiting to be input.

You now have your three most valued systems employees poring over terminals, scratching their heads and calling out strange commands to one another, all the while feverishly hammering on their keyboards.

In one hour, your regular crew gets in to work. You decide to send the night shift home. The night supervisor, looking like a shell-shocked junior lieutenant, says he'll stay to help wherever he can. And he wants to know what the hell happened and when.

It's 9 a.m. Now your day crew is standing idly around the perimeter of the room, waiting to work. The maintenance guys say they've isolated the core of the virus, but they're not sure what to do about it. They say it's pretty small, maybe only about 80K bytes in size, but that it's like a black hole — it has eaten all of the space around it.

What about the regular files? Is the data intact? They're not sure. One says yes, the other says no, the third is undecided. They'll be able to tell in a while. You run your hand through your hair for the 30,000th time in an hour.

Thunder-lined memo

At 10:15 a.m., you get a memo from the office of the CEO. You're sure he is unaware of the situation, but his memo is ominous. It reminds you that the company is preparing to send its annual report to the printers, so the accounting and marketing departments need their printouts today to verify any last-minute changes.

Wonderful. The head of the marketing department has been harping on you for two weeks to be ready today, because he's got the printer standing by, and he's on a very close timetable. A missed day could set the project back by as much as two weeks.

Noon. Your entire staff, except for the three maintenance people, have gone to lunch. They have done no work — just watched the work load pile up. Your department is now nine hours backlogged, the equivalent of one working day. You have turned down three report requests and informed the CEO, COO, CFO and the marketing and accounting departments that your computer system is in-

Continued on page 20

Newquist writes and consults on artificial intelligence and other advanced high-technology topics from his office in Scottsdale, Ariz.

Newquist

CONTINUED FROM PAGE 19

operable, and the situation is grave. They are not pleased.

At 1:27 p.m., your maintenance people let out a shriek of delight. They have excised the disease, like surgeons removing a tumor. All data files have retained their integrity; nothing was seemingly damaged.

As they slap each other on their backs, the computer room goes back to work. There is no way that you're going to get marketing its printout today, and accounting needs its work first.

There goes the schedule for the annual report. Trying to tell them it is not your fault is like Nixon telling the nation he knew nothing about Watergate. It's your department, so it's your fault.

The three technicians start talking about the virus. "Boy, that guy sure knew what he was doing. He got in on the phone lines between shifts when no one was paying attention . . . ."

"Brilliant! His program was tiny, yet it grew to the size of Godzilla in about two hours! You gotta be a genius to be able to create something that monstrous . . . ."

While you listen to them extol the virtues of hacking, you calculate the costs of this genius' work. Two shifts of work where no work was produced. Nothing input, no output. Transactions for almost two full days are backlogged. A setback in printing the company's single most important yearly document.

Other departments are still waiting idly for needed reports in order to perform their corporate duties. They'll probably have until Monday, since today is Friday, and nothing is getting out of your department today, except accounting's printout.

You will need to bring in a shift during the weekend just to catch up on last night and today. There goes this month's data processing budget.

AS YOU CONTINUE to hear about the genius of the virus, your only thoughts are of revenge. Who would do this and why?

Your boss — correction, your bosses — are angry. They want a full review of the system and all of its shortcomings, implying that your operation is less than sound. There goes more money for an outside auditor.

As you continue to hear about the genius of the virus, your only thoughts are of revenge. Who would do this and why? Your sense of overexaggeration is gone.

This hacker invaded the sanctity of your domain, costing untold hours of your grief and the company's money. You now have a sense of proportion.

You wonder if anyone has ever taken out a contract on a hacker before.

Kirkley

CONTINUED FROM PAGE 19

that you could install a payroll system and see an immediate, massive reduction in head count.

"Today, we're looking at 'softer' justifications, and this is where top managers earn their money, making these tough decisions."

Top management must be told, he said, that a new system might be just the tip of the spending iceberg.

For example, an electronic mail system might have been initially installed for a simple, cost-justified reason; but users, being the intelligent, creative people they are, will quickly begin to find new applications for the system. Costs may soar. However, new and better ways of doing business should also emerge.

War veteran

One veteran of the corporate wars has devised a ranking of justification techniques based on degrees of subtlety. First is the "standard old situation" — justification based on return on investment, such as reducing head count, eliminating time delays, displacing old costs with new systems — particularly in telecommunications, she notes.

Next, is a substantial face-lift of systems or adding new functionality. For example, in the banking industry, old and unreliable money-transfer systems need to be replaced. Here, you use the rubric "modernization."

Finally, and most difficult to justify, are systems introduced on the basis that they will pay off, but not in any bottom-line, immediately tangible way. Building better customer information files, installing a decision-support system and cleaning up databases all come under this category. Here, she says, is where decisions are made on intuition and gut feelings backed up by years of experience.

In an ideal situation, the IS manager and top management would work together to devise information strategies. This joint planning would include a cooperative budgeting process. Justification would be a moot point.

But in the real world, there will always be those managers looking at you down the barrel of their gold pens, asking you, in a tone of voice that suggests your answer will never be quite satisfactory, to justify your existence.

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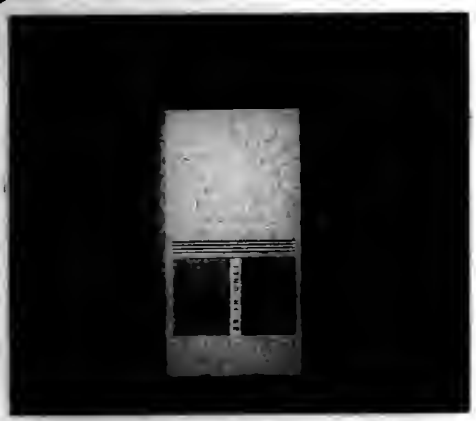

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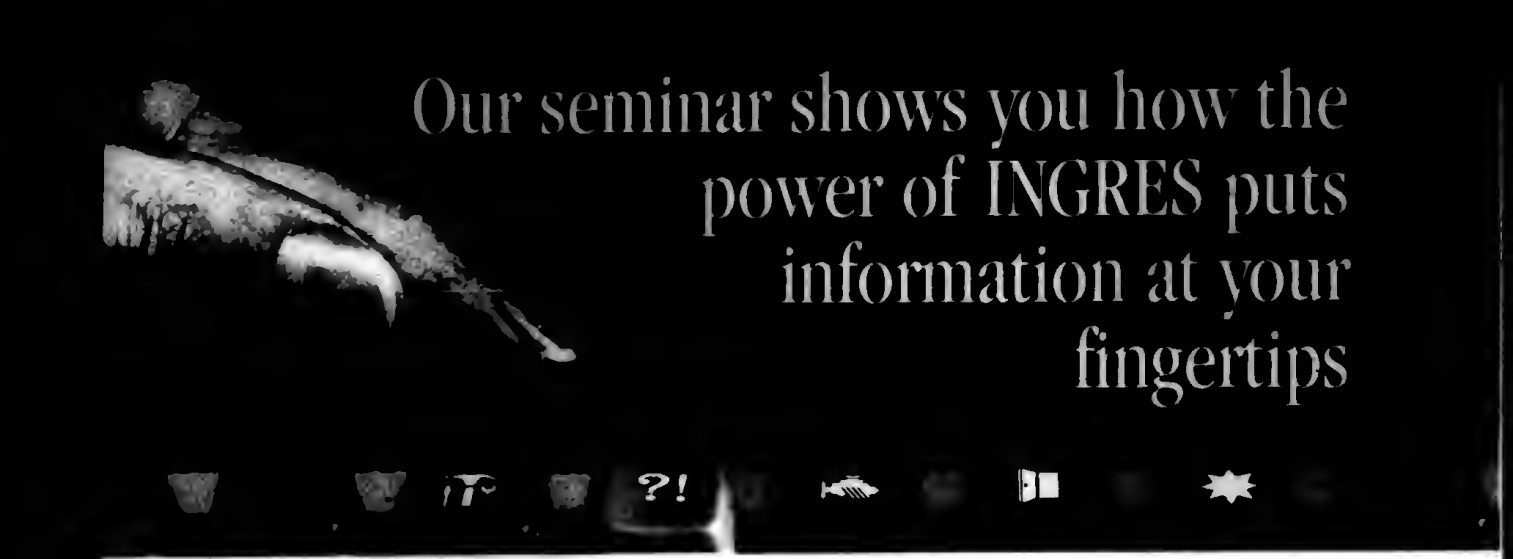

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HARD TALK

Stanley Gibson

The changing of the fads

Whatever happened to the industry battle cry of a couple of years ago: "We don't sell products, we sell solutions"? You don't hear it so much anymore.

On the contrary, the wheel has come full circle. Now the rage is, "We sell the best/fastest/most powerful products." Benchmarks, of course, are part of the current marketing craze.

The idea of selling a soup-to-nuts package that was part of a partnership in which the performance of products was a marginal issue seems to have fallen by the wayside. In the world of today's generic products, you need the optimal generic product. Forget the intangibles.

Are we in the middle of a fad, which, like many fads, is itself a counterfad to the previous fad? Probably. But there is more to it than that. Users are unquestionably looking for reliable yardsticks to measure vendor claims. Users are looking closely at performance benchmarks in an effort to get the most for their computing dollar.

Increasingly, users are being asked to play the role of sys-

Continued on page 27

Step closer to home

Cray used to speed mortgage processing process

ON SITE

BY JAMES DALY
CW STAFF

NEW YORK — When Cathy and John Doyle move into their first home in Lakewood, N.J., later this year, they can thank not only years of hard work and squirreling away their cash, they can thank a Cray Research, Inc. supercomputer.

The reason? Players in the fast-paced financial markets, into which their mortgage has been cast, demand the lightning-speed processing of a Cray supercomputer to help them make investing decisions.

The mortgage payment they tuck into an envelope and mail off to their local bank each month is just one tiny part of an enormous pool of such mortgages that are bought up by individual investors. But the mortgages are only purchased when the investors feel the price is right. At investment house Goldman, Sachs & Co. in New York, that is where the Cray steps in.

"Last year, the simulation model we used to determine the risk involved in investing in these securities took 48 hours to run on a Digital Equipment Corp. VAX. We've cut that down to 10 minutes," said Scott F. Richard, vice-president of mortgage securities research at Goldman Sachs. The firm now rents time on a Cray II to help handle complex risk-simulation models.

In the 1970s, a new type of security rapidly gained investor favor. Mortgage-backed securities begin when a home buyer receives a mortgage from a local lending institution. The lender then combines many such mortgages into a pool often worth $1 billion or more, slices up the mortgage IOUs and sells them to investors in the form of certificates.

As the home owners make monthly payments on their loans, owners of these certificates receive a share of the prin-

Continued on page 26

Goldman Sachs' Richard

Apollo says its supers are best

BY JAMES DALY
CW STAFF

CHELMSFORD, Mass. — Apollo Computer, Inc. claimed that its Series 10000 Personal Supercomputer bettered the performance of a bevy of heavyweight competitors in a recent spate of performance challenges on both the East and West Coasts.

However, the tests were conducted by Apollo — not by an independent auditor.

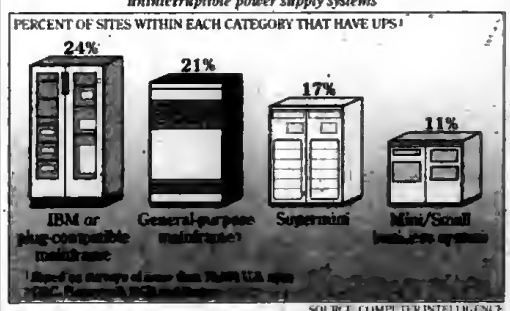
In an effort to buttress its claim that the Series 10000 brings the power of a supercomputer to the desk top, the work-

Continued on page 27

Data View

UPS absent at most sites

Companies with bigger computer systems more often use uninterruptible power supply systems



SOURCE: COMPUTER INTELLIGENCE
CW CHART: FRANK C. O'CONNELL

HARD BITS

Alliant signs NTT deal

NTT Data Communications Systems Corp., a subsidiary of Nippon Telegraph and Telephone Corp. in Japan, recently purchased $10 million worth of **Alliant Computer Systems Corp.** supercomputers. The Alliant FX/40 and FX/80 parallel processing systems will be used by NTT Data to expand its data communications network.

Alliant also said it shipped graphics display stations to China. The 50 Alliant display stations are part of a $12.5 million package that **Geoquest Systems, Inc.** in Houston is selling to the Chinese government. Geoquest is providing hardware and software for use by the China National Offshore Oil Corp.

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Inside

- OSF touts graphical user interface. Page 25.
- BASF brings ¼-in. tapes to U.S. Page 25.
- Clearpoint Research announces Sun memory devices. Page 28.

IBM Business Partner

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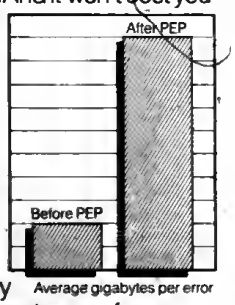

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BASF

OSF adopts composite interface

DEC tool kit, Presentation Manager-like traits are primary elements

ANALYSIS

BY STANLEY GIBSON
CW STAFF

Striving to please the greatest number of developers and users as quickly as possible, the Open Software Foundation (OSF) recently announced a hybrid graphical user interface for its planned version of the Unix operating system. The choice, as anticipated [CW, Dec. 19, 1988], draws on a tool kit from Digital Equipment Corp. with user interface characteristics jointly submitted by Hewlett-Packard Co. and Microsoft Corp.

The work of DEC in recruiting independent software vendors to develop for the X User Interface (XUI), on which Decwindows is based, paid off in the selection process, according to participants. Richard Treadway, Decwindows program manager at DEC, said some 300 independents have been working with the development tools.

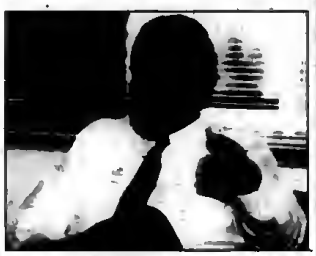
Meanwhile, HP and Microsoft's submission, which includes the behavior of Microsoft's Presentation Manager, was selected because many personal computer users who use the Presentation Manager will feel comfortable with the interface. "Our goal is to bring the PC users to Unix — also to say we are going to co-exist in a world of Presentation Manager and Unix-based systems," said John Paul, OSF director of development.

Part of the HP-Microsoft submission was a three-dimensional appearance feature, which can cause a box on the screen to look as if it is raised or depressed.

"If you look at the OSF offering in June, it will look like HP's New Wave, including the 3-D appearance. It will look like Presentation Manager with 3-D," Paul said.

The part of the graphical user interface that comes from DEC, the XUI-based development environment of Decwindows, will not be immediately apparent from the screen's appearance. Developers who have worked with DEC on its Decwindows program will notice no change. "If you were an independent software vendor writing an application, you will be dealing with the same thing," Paul said.

DEC is set to formally announce Decwindows tomorrow, although the firm actually began shipping Decwindows in December with Version 3.0 of its Ultrix 32 operating system. Development of Decwindows was complete six months ago, Paul indicated. "DEC delivered us the most mature, best-performing tool kit," he said.



OSF's John Paul *values timeliness*

Although the OSF could have chosen the totality of either

Continued on page 27

BASF to peddle ¼-in. tape cartridges in U.S.

BASF Corp., which is a leading supplier of tape cartridges for IBM 3480 users, has announced plans to enter the U.S. ¼-in. tape market.

The organization, which has been selling ¼-in. tapes in Europe for a year, said recently that it plans to market the tapes primarily to microcomputer users, although it will offer the tape cartridges to mid-range system users as well.

The tape cartridges are compatible with the ¼-in. products supplied by 3M Corp., BASF said.

According to BASF, ¼-in. tapes are increasingly used in microcomputer-based environments, particularly networked workstation setups, for back-up purposes.

The cartridges, which are guaranteed for 5,000 passes, will be offered in five configurations, including the 5¼-in. size and the 3½-in. mini cartridge size. Those two sizes will be offered in different tape lengths and recording densities.

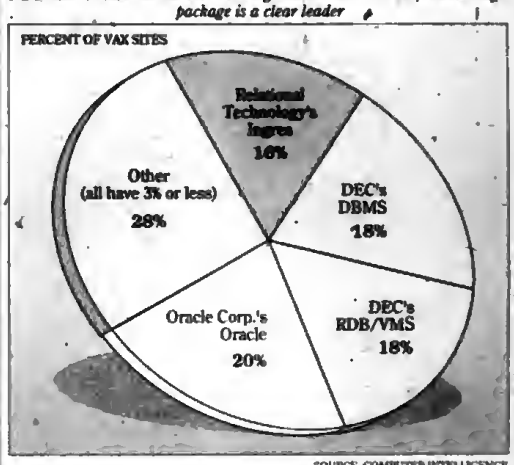
The tapes will be sold primarily through BASF resellers. Retail prices will range between $25 and $35 per cartridge, the company said.

BASF said the tape cartridges are available now in limited quantities. A spokesman said the company expects to be shipping the products at full volume within three to six months.

Data View

Four-way race

DEC claims most market share among DBMSs at VAX sites, but no single package is a clear leader


PERCENT OF VAX SITES
Relational Technology's Ingres 16%
DEC's DBMS 18%
DEC's RDB/VMS 18%
Oracle Corp.'s Oracle 20%
Other (all have 3% or less) 28%

SOURCE: COMPUTER INTELLIGENCE
CW CHART

SOFT NOTES

Relational Technology offers Ingres Release 6.1 upgrade

Relational Technology, Inc. said it began volume shipments of its latest Ingres release, 6.1, which was designed for on-line transaction processing environments. The company said Release 6.1 is capable of 30 transaction/sec. on a Digital Equipment Corp. VAX 8700 — twice the performance of the previous Ingres release. It will be offered as a no-cost upgrade to existing Ingres users.

Thirteen computer companies, including Digital Equipment Corp. and Hewlett-Packard Co., the Open Software Foundation and MIT plan to develop a three-dimensional version of the X Window System. This will be achieved, the group said, by added a network protocol known as PHIGS/PHIGS Plus Extension to X. PHIGS, the Programmers Hierarchical Interactive Graphics System, is a 3-D graphics standard. PHIGS Plus is being proposed as an add-on standard to include lighting, shading, depth, depth cueing, advanced curve and surface primitives to the basic PHIGS.

Continued on page 26

CICSORT

Syllogy announces an online sort that will bring down the house instead of the system.

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Step closer

FROM PAGE 23

cipal and interest payments. The funds then reinvest the principal and send the interest as monthly dividends.

The banks issuing these securities insure them with one of several government agencies, the most popular agency being the Government National Mortgage Association — commonly known as Ginnie Mae — and the Federal Home Loan Mortgage Corp. — or Freddie Mac — Richard said.

Although these funds are backed by the "full faith and credit" of the federal government — if the mortgages default, the U.S. Department of the Treasury makes up the payment to investors — they are not totally risk free.

When interest rates fall, home owners rush to pay off their mortgages ahead of schedule and refinance at lower rates. Thus, mortgages may be closed out before all interest payments have been made, reducing investor yield.

Goldman Sachs evaluates the securities in a two-step procedure. First, a basic model of how and why home owners prepay was formulated, using a very complicated model and factoring in large data sets on such variables as interest rates and age of mortgages at prepayment.

> "IF IT'S going to be a useful managerial tool, we have to get the answer out within an hour."
>
> SCOTT F. RICHARD
> GOLDMAN, SACHS & CO.

This base model was formulated on a Cray X-MP/48 at the Pittsburgh Supercomputing Center last year by Richard, who is on leave from Carnegie-Mellon University's Graduate School of Industrial Administration, where he is a professor of finance and economics.

Using this information, Goldman Sachs figures out what mortgage rates should be and compares them with what is being offered to decide if they present an attractive investment option. "We compare what they're being sold at with what we think they're worth," Richard said.

This information is processed by a Cray II at the Minnesota Supercomputing Center in Minneapolis because it offers good service at a good price, Richard said. Goldman Sachs traders hook up to the center via telephone lines and a wide variety of workstations and personal computers. The investment firm is then charged for the system's rental.

The Cray machine handles work formerly done on either an IBM 3090, a DEC Vaxcluster or a Convex Computer Corp. minisupercomputer that the firm owned. But those models simply were too slow. "When I arrived here a year ago, the simulation model took two days to run," Richard said. "And I knew if it's going to be a useful managerial tool, we have to get the answer out within an hour."

The results so far have been dramatic. "Before, we used much smaller samples and simpler models" Richard said. "So not only have we gained speed, we've gained accuracy. What more could you ask for in a competitive advantage?"

Soft notes

FROM PAGE 25

Amoco Corp. in Chicago selected **Interleaf, Inc.** in Cambridge, Mass., as its provider of electronic publishing software. The organization acquired 500 licenses to the Interleaf software as well as system integration services.

Candle Corp. and **BGS Systems** signed a technical information exchange agreement. The companies said the deal will enable them to share information for development of both performance and capacity planning tools. Candle supplies systems information and performance measurement tools, while BGS markets capacity planning and modeling software.

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Gibson

CONTINUED FROM PAGE 23

tems integrator in shops that are moving to standards. They want hard facts, not warm fuzzies.

The trend of computing hardware and software to become a commodity is real, and users are currently a driving force behind it. How quickly times change.

The commodity force is at work in the software industry, driven by Computer Associates International, Inc.

When CA was stalking Applied Data Research, Inc., (ADR) in the early summer, a wave of panic came across ADR employees, many of whom feared they would be cut in a purge of workers like those that followed other CA takeovers.

Of course at that time, ADR was reportedly hemorrhaging money. Its financial results were not broken out separately from its parent Ameritech, but the reports were not good.

The best that I have been able to piece together is that Ameritech did not know what it was doing in "managing" ADR. It let the firm spend freely on R&D and support. And much of that money was apparently spent fruitlessly.

ADR's liberal customer attention was very popular among end users. They feared the ruthless cost-cutting of CA would inevitably threaten this level of customer service, and they were worried.

I asked one user what would be worse, an ADR that continued as it had been and did not survive, or an ADR that cut back somewhat on support but did survive. "I hadn't thought of it that way," he answered.

If you were getting something for nothing and all of a sudden were to stop getting it, you might be displeased. But you shouldn't be surprised.

CA's cutting of excessive hand-holding would strike at the heart of ADR's problems. Although it might be a bit humbling for users to find themselves switched from a Cadillac to a Chevrolet, it is better to arrive in a Chevrolet than not to arrive at all.

Gibson is *Computerworld's* senior editor, software.

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  EVALUATE statement
  Negated conditions
  Global variables
  Reference modifications
  Nested programs

Native Code compiler with fast execution. NEW!

- 10x faster computations than MS COBOL 2.2
- 30% faster I/O than MS COBOL 2.2

OSF

CONTINUED FROM PAGE 25

DEC's or HP's submission, which would have been available right away, the group opted for a combined interface, which is an improvement over either of the separate offerings, according to Paul.

He added that the hybrid interface should be completed and available in six months, a lead time he called acceptable. "Timeliness is important. Our members said pick something you can deliver," Paul said.

Paul said Open Look, the graphical user interface of AT&T (the OSF's archrival in the struggle to establish a standard Unix), was one of 23 user interface submissions that conform to the OSF's published mandatory guidelines. "And their business terms were acceptable," Paul added. However, he declined to comment on why Open Look was not chosen.

DEC and HP both claimed victory because parts of what they submitted were accepted. Both asserted that the choice will help establish Decwindows and New Wave as standards.

"HP is pleased because it gets a user interface that is consistent with that of New Wave, something that was needed to make New Wave the standard they wanted it to be," said Nick Fowler, marketing manager for user interfaces at HP.

"The hybrid is both technically superior and politically palatable," he added.

"The engine and drive train are the same, although the decoration and dashboard are new," DEC's Treadway said.

The only differences

According to Treadway, there are only two differences between the Presentation Manager-type interface chosen and the Decwindows interface that was not chosen.

Under Presentation Manager, a user may operate without a mouse, which is not possible with the Decwindows interface. In addition, the method of invoking menus with the mouse is slightly different.

Paul said there are other differences as well, although the two mentioned above are the most significant.

Apollo

CONTINUED FROM PAGE 23

station maker pitted a reduced intruction set computing-based Series 10000 against an Amdahl Corp. mainframe, Convex Computer Corp. and Alliant Computer Systems Corp. minisupercomputers, Digital Equipment Corp. minicomputers and Sun Microsystems, Inc. workstations.

Fortran-based mathematical programs, isothermal flow application, a designer's matrix multiplication and circuit stimulation programs were all run during the November tests. The results from these tests were recently announced by the company.

Apollo said its Series 10000 performed more than seven times faster than a DEC VAX 8600 minicomputer running a designer's matrix multiplication, six times faster than a Sun-4/260 workstation running a Fortran benchmark and three times faster than a Convex C-1 minisupercomputer using a Fortran-based mathematical program.

Hard bits

CONTINUED FROM PAGE 23

Service & Training, Inc. will open a service center for **Data General Corp.** systems in Colorado Springs later this month. It plans to offer service rates that are as much as 40% less than what DG currently offers. The company plans to store replacement parts for systems, including the MV 15000 and MV 23000 as well as disk drives and other peripherals.

Encore Computer Corp. announced plans to sell its Annex Terminal Server product line to **Xylogics, Inc.** for $4 million in cash. Encore called the sale a "strategic financing move" to provide it with more funds to expand its Multimax Parallel Processing Computer System line.

The company intends to continue selling and supporting the Annex II Terminal Server product to its traditional customers.

Sun Microsystems, Inc. opened a subsidiary in Madrid, bringing the number of European offices to eight.

Amperif Corp. in Chatsworth, Calif., is offering a free one-year warranty program for its storage subsystem that is compatible with the Unisys Corp. Model 9200 Mass Storage System. With the Uptime Plus program, there is no charge for parts and labor during the first year. The package includes 24-hour service seven days a week.

Users are not charged an additional cost for weekend, holiday or after-hours service, the company said.

Tandem Computers, Inc. said its Nonstop CLX on-line transaction processing systems and V80 disk storage system were awarded the Good Design Prize for Foreign Products by the Japanese Ministry of International Trade and Industry.

Texas Instruments, Inc. said its research scientists in Dallas recently fabricated a quantum-effect transistor that is 1,000 times faster than conventional transistors.

The quantum-effect transistor is 100 times smaller than conventional versions. It operates on different principles than current transistors that govern the behavior of matter and dimensions of .02 microns or less, the company said.

TI cautioned that much work needs to be done before the ultrasmall transistors can be used. The techniques required to manufacture and interconnect the devices in production quantities have yet to be developed, the company added.

NCR Corp. recently signed a four-year deal worth $8 million with **Verifone, Inc.** in Redwood City, Calif., to sell its data collection terminals. NCR will market the Verifone terminals to U.S. manufacturing companies.

Storage Technology Corp. said it shipped a 4400 Automated Cartridge System to Fuji Heavy Industries, Inc., a manufacturer of Subaru cars in Gunma, Japan. According to Storage Tek, that shipment was the 250th of its automated product. The Automated Cartridge System is an 18-track cartridge-based storage and retrieval system that includes host software that resides on a mainframe with access to its storage library.

Apollo Computer, Inc. recently added 43 suppliers to its Apollo Partners Program, which is made up of value-added reseliers and OEMs.

Eastman Kodak Co.'s Mass Memory Division selected **Aquidneck Systems International, Inc.** to manufacture controllers for its optical disk system, the 6800 Automated Disk Library, and standalone drive products. Kodak said it will be able to connect its optical drive to most minicomputers and mainframes with the Aquidneck controller.

The company said Aquidneck's product has been selected by several companies and government agencies, including the National Aeronautics and Space Administration and United Technologies Corp. as the optical archiving interface standard.

A **Sequoia Systems, Inc.** fault-tolerant computer was selected by **Richfood, Inc.**, a wholesale food distributor in Richmond, Va. The system will replace a Honeywell Bull, Inc. system, the company said. The $1 million Sequoia computer will process daily orders from 750 retailers in the Richfood network.

NEW PRODUCTS — SYSTEMS

Processors

Community Health Computing, Inc. has unveiled an integrated radiology information system, called **Radcare.**

The system reportedly encompasses several features, including information management, a financial system, diagnostic reporting (digital dictation and voice recognition), picture archiving and communications functions. According to the vendor, the product interfaces to the hospital information system and incorporates a fault-tolerant hardware platform.

Radcare is available on a client-specified, modular basis. Pricing depends on specific configuration.

Community Health Computing, Suite 2000, 5 Greenway Plaza, Houston, Texas 77046. 800-231-2604.

Data storage

Clearpoint Research Corp. has announced a series of Sun Microsystems, Inc. Sun 3/50-compatible memory devices.

Available in both 4M- and 8M-byte daughtercards, the **SNME-350** series reportedly allows users to expand their Sun 3/50 systems to a total of 8M or 12M bytes. The boards are said to be customer-installable and require no soldering.

The SNME-350/4MB costs $2,995; the SNME-350/8MB is priced at $4,995.

Clearpoint, 99 South St., Hopkinton, Mass. 01748. 508-435-2000.

A disk processing system specifically designed for use with super and minisupercomputers, imaging computers and high-speed data acquisition systems has been introduced by **Storage Concepts, Inc.**

Concept 51 reportedly provides high-capacity storage via 5¼-in. disks and allows one disk-controlling unit to support up to 63 disk drives. The system is packaged in a single rack-mountable chassis that incorporates a controller unit, data buffers, system power and cooling and over 6G bytes of storage.

The product supports several buses, including Digital Equipment Corp.'s Qbus and Unibus. Prices for the controller start at $17,900.

Storage Concepts, 1622 Deere Ave., Irvine, Calif. 92714. 714-852-8511.

Power supplies

Perma Power Electronics, Inc. has announced a 1200VA version of its standby power system for micro and minicomputers.

According to the company, the **SPS-1200** protects against data loss and equipment damage resulting from blackouts, sags and brownouts and automatically protects against overload without the use of special load meters.

The SPS-1200 costs $1,299.

Perma Power, 5601 W. Howard Ave., Chicago, Ill. 60648. 312-647-9414.

NEW PRODUCTS — SOFTWARE

System software

SDI Co. has announced an IBM VM product designed to improve system performance by caching the VSE lockfile in processor storage for immediate access.

According to the company, **Cache Magic XA/LF** eliminates the contention created by multiple VSE guests requiring constant access. The product carries a license fee of $8,500, and trial systems are available from the vendor.

SDI, 1700 S. El Camino Real, San Mateo, Calif. 94402. 415-572-1200.

Database management systems

Software designed to address batch problems for IBM DB2 users has been announced by **Relational Architects, Inc.**

Called **DB2/Batch,** the product reportedly can run DB2 programs directly in batch without the use of conventional IBM JCL and allows batch DB2 programs to work compatibly with job-scheduling packages and multistep job streams.

DB2/Batch costs $4,500 for a perpetual license or it can be rented for $270 per month.

Relational Architects, Suite 2341, 175 5th Ave., New York, N.Y. 10010. 212-966-0010.

AT&T and **Intercon Systems Corp.** have introduced a package designed to add multilevel security features to database management systems.

Called the **Trudata Model 3BBL,** the product is said to be compatible with AT&T Unix System V/MLS secure software and the Unix operating system. It incorporates audit trail facilities as well as tracking by terminal access, date, time and type of access, according to the vendors.

Reportedly developed for use with any DBMS that has an ANSI-standard SQL interface, Trudata Model 3BBL is priced from $20,000 to $40,000, depending on quantity ordered and system configuration.

AT&T, National Product Center, 1 Speedwell Ave., Morristown, N.J. 07960. 800-247-1212.

Are you Managing Micros by the Books?

The major PC trade journals agree that The Micro Resource Manager (MRM) is the recognized standard for professional micro management. MRM has earned the universal praise of micro managers, MIS directors, and software experts worldwide.

Here's what the "books" are saying...

PC WORLD — *"The beauty of MRM is that it serves as a self-contained environment for the business of micro management . . . MRM is well conceived and designed, packing a great deal of power and flexibility. . . ."*

PCWEEK — *"Overall MRM is highly complex and powerful, but it's ease-of-use factors make accessing the valuable information it contains surprisingly easy." MRM "makes the task of tracking PC equipment not only possible, but also highly efficient and effective . . . it is hard to imagine a system that would make those tasks easier."*

INFO WORLD — *"MRM does everything you could possibly want from a product like this and more . . . valuable, well-thought-out, and very powerful specialized database system for microcomputer managers."*

[redacted] — *Named MRM to their 1987 top 10 list of multi-user applications.*

MRM—A TOTAL SOLUTION

MRM is the most comprehensive and sophisticated software available for managing, supporting, and analyzing the use of microcomputers. Track hardware, software, peripherals, or services—by item or by system. Track PC's, minis, or mainframes. Analyze budgets and trends. Send memos to selected users. Log, track, and cost user requests for support.

Over **200 reports and queries** provide fast and flexible access to essential information in these key areas:

- Inventory Tracking
- Configuration Management
- Maintenance Management
- Purchasing & Receiving
- On-line Tech Notes
- Network Config. Mgmt.
- Problem Tracking
- Management Reporting

MRM has the features you need for increased efficiency and greater control. MRM also provides the high-level analysis of costs and use that management requires for strategic planning and long-term forecasting.

A FOURTH-GENERATION APPLICATION

Written in PROGRESS, a fourth-generation, relational database MRM's advanced user interface takes power and ease-of-use one step further than ordinary applications. Menus, windows, function keys, record scrolling, and "zoom" keys provide rapid cross-searching of data and effortless navigation through multiple data files. Rigorous data validation, automatic data base recovery, and multi-level user security ensure system integrity. Multiple report sequences and flexible selection criteria provide powerful ad hoc reporting. MRM is currently available on single-user MS-DOS, multi-user LANs, and VAX VMS.

GET INFORMATION FAST

With MRM's "borderless" database navigation, detailed information is always only seconds away. Imagine scrolling through a list of PC configurations, selecting the specific configuration you're looking for, and "zooming" into a summary of the components in that configuration. Then imagine selecting a specific component and "zooming" into the detailed inventory record. All the information you need—warranty, maintenance, purchasing data, etc.—is now at your fingertips. Finally, with a single keystroke, you can reassign that component to another configuration.

Call or write today for our FREE demo disk. Or better yet, order our one-hour MRM video.

These are just some of the organizations that have discovered the TOTAL solution to managing micros:

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Alcan Aluminum
American Airlines
American Restaurants
Ashland Chemical
Bankers Trust Co.
Barclay's Bank
Baxter Hospital Supply
Bechtel
Blue Cross/Blue Shield
Cargill, Inc.
Caterpillar
Chase Manhattan Bank
Chemical Bank
Citibank
Coca Cola Co.
Conoil
Crellinet
Enron
EPA
FAA
FBI
General
Grumman
Honeywell Inc
Hydro Quebec
IBM
ITT
James River Corp.
Levi Strauss
Library of Congress
Los Angeles Times
Manhattan District Atty.
Manufacturer's Hanover
Marine Midland Bank
Mobil Corporation
Merrill Lynch
NARDAC
NASA
Naval Academy
Naval War College
NBC
Nordstrom
North American Philips
Orion Pictures
Pepperidge Farms
Pepsi Co
Prudential Banks
Royal Insurance
Saatchi & Saatchi
Salomon Brothers
Scott Paper
Sotheby's
Steven Frankel
Statistics Canada
Super Value Stores
Time Inc
Toys 'R' Us
United Airlines
Upjohn
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US Dept. of Agriculture
US Dept. of The Army
US Dept. of Revenue
US Dept. of Labor
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Ever since the first mainframe and the first storage device were invented, there have been a few unwritten rules.

1. *The mainframe gets all the brains.*
2. *The disk gets oll the data.*
3. *These two are separated by a storage controller that has about as much problem-solving capability as a light switch.*

As a result, storage subsystems are less than models of efficiency. In fact, channel utilization is usually limited to 35% or less.

But at Amdahl, we've come up with a completely new approach to the problem. The Amdahl 6100 Storage Processor. Instead of a low-tech controller, we've made the Amdahl 6100 an incredibly intelligent solution.

In different configurations, it has 12 to 37 microprocessors, all dedicated to the job of making your storage subsystem a lot more efficient. And a lot easier to manage.

As a result, you can have a fully balanced storage subsystem. With up to four times the throughput. Twice the capacity. And shared cache capability. In fact, this new approach works so well that it can actually lower your overall cost per I/O and your cost per byte of data stored.

R GETS 30 BRAINS.

Breakthrough approach creates storage system of '90s.

With all its intelligence, the Amdahl 6100 can control more resources creating a far more sophisticated storage subsystem. With 240GB capacity, 32 CPU attachments, 16 concurrent I/O paths, 16 device paths, 512MB shared storage, and 16MB nonvolatile storage.

With this incredible flexibility, you'll enjoy immediate advantages. You can tailor the 6100 to meet individual needs. And forget about tradeoffs between capacity and performance. With fewer storage subsystems, cabling to host CPUs is much simpler. And with 32 CPU attachments, multiple CPUs can access the integrated storage subsystems.

And those are just the immediate advantages. With all this power and capacity, the 6100 will provide for storage growth well into the '90s. And its processor design makes it easy to add new functional and performance enhancements to all 6100s.

DASD resources managed intelligently for first time.

With most controllers, connectivity has been limited to four lines in and out. So to keep access times down, DASD systems have suffered from poor use of disk space.

But now, with the 6100's microprocessors working full-time, you get up to 16 host data transfers, 16 device transfers, and sophisticated cache management. All of which lets you move data between host CPUs and the 6100 much faster. Up to 72MB/second. At the same time, you can reclaim a large percentage of previously unused disk space.

Shared cache needs less attention from specialists.

With the Amdahl 6100, you get up to 512MB of cache. But instead of being divided into fixed compartments, the 6100 dynamically adjusts to the environment. So you won't have to spend your time tuning across DASD strings to keep up with changing workloads. Instead, you can concentrate on more rewarding work.

Cost of operation hits all-time low.

When you look at the big picture, here's the most revolutionary idea of all. Almost 50% of your total hardware budget goes for storage. And if you install our 6100 now, your storage subsystem will become a major contributor to a well-balanced system. Instead of just being necessary overhead.

Besides the benefits it brings to your storage subsystem, a balanced system can actually reduce the load on your CPUs. Which, in turn, can raise your productivity. And lower your overall cost of computing. All of which makes very good business sense. Just call your Amdahl representative. And we'll show you how smart a storage processor really can be.

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MICRO BITS

Douglas Barney

Pull out the crystal ball

More inane predictions. Every year, right around New Year's Day, a bunch of jerks in the industry take it upon themselves to predict the future, as if they know better than anyone else what will happen. I predict the same thing will happen this year. Other predictions follow:

- About one-third of my predictions will at least in some way be wrong — maybe more, in fact. Some will be correct, although probably due to a fluke.
- IBM will gain back personal computer market share. Decent values and the fact that the Micro Channel Architecture is now being exploited will help tremendously. IBM will also have a cheap 80386 machine that will sell very well.

Meanwhile, EISA — that gang of IBM competitors supposedly working on an alternative to the PS/2 — may actually create a new bus. It's just that no one will care.

- Although Excel will fail to make a major dent in Lotus' 1-2-3 sales, Microsoft will remain the largest PC software house, Lotus will remain No. 2, and Ashton-Tate will remain No. 3.

Continued on page 32

SQL not Dbase forte, test finds

Ashton-Tate promises to correct query flaws after competitor criticism

BY DOUGLAS BARNEY
CW STAFF

TORRANCE, Calif. — All along, critics argued that Ashton-Tate Corp. would not be able to produce an effective implementation of SQL in its Dbase IV product, charges the company vehemently denied. Now that Dbase IV is out, it seems the critics were right after all, at least regarding Ashton-Tate's first crack at SQL.

According to Fred Luk, president of Quadbase Systems, Inc., who has tested Dbase IV, users may get incorrect results from even simple SQL queries. Luk tested Dbase IV against his own product, Dquery, which provides Dbase III Plus with SQL capabilities. Ashton-Tate has not denied his findings and pledges to correct Dbase IV flaws.

With some queries, Dbase IV found an incorrect result. With others, it failed to run because of internal errors. At other times, Dbase IV's SQL gave inconsistent results depending on the method of querying.

Fortunately, an Ashton-Tate spokesperson said, some fixes should already be available through the Compuserve on-line service. Ashton-Tate officials also said the SQL problems are very data dependent, only cropping up when the product is used in unusual and specific ways.

The biggest problem for Ashton-Tate was its lack of SQL experience. Unlike many SQL developers with years of experience, Ashton-Tate had to build its complex SQL system nearly from scratch.

Another problem for SQL programmers is the lack of support for nulls — a way of dealing with missing data — said Fabian Pascal, an independent relational database consultant based in Washington, D.C.

Others have criticized the performance of the SQL. The central problem with the performance is that SQL was designed with so-called set processing in mind, where data is manipulated in entire tables. Dbase IV, however, maintains its record-at-a-time database engine. Translating between the two is both difficult and slow.

SQL bugs accompany problems in other areas of the product, including numerous incompatibilities with Dbase III Plus and problems with the Run command [CW, Nov. 12, 1988].

No browsing

Calculated fields (where data values are computed as entered) do not work properly either, said noted Dbase teacher Adam Green. Calculated fields work only with Browse and do not work with Edit of Append. Nor does the documentation match the product, Green argued. For example, the manual provides messages that the Range command is supposed to give. The range command, however, fails to provide these messages.

There is also little backward compatibility for Dbase IV users that take advantage of the new memo fields feature. Any Dbase IV database that uses memo fields can not be read by Dbase III, Dbase III Plus or any Dbase compatible.

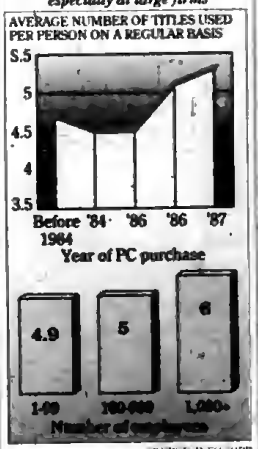
Although Ashton-Tate never promised full backward compatibility, the new memo fields will present a major problem for firms with a mix of Dbase III and Dbase IV users.

"People are going to have to share data," Green said. "There is not going to be an instant upgrade."

Data View

PC packages bigger in big business

Users are running more micro software titles than ever, especially at large firms



Jaguar revs worksheets for 1-2-3

BY MICHAEL ALEXANDER
CW STAFF

Next month, end users will get a first-hand look at Jaguar and King Jaguar, two new spreadsheet compilers from Sheng Labs in Beaverton, Ore.

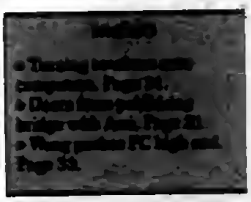
The two products are said to compile worksheets into executable files that are compatible with Lotus Development Corp.'s 1-2-3 and other spreadsheets, yet do not require that end users own the application program.

Jaguar and King Jaguar support 1-2-3 Versions 1.0a, 2.0 and 2.01. The company said it will also support Release 3.0 when it becomes available.

According to Sheng Labs, the spreadsheet compilers offer the advantages of speed, because the compiled application runs faster than interpreted programs, and security, because end users cannot alter the executable file.

Jaguar, which retails for $395, features a symbolic debugger that supports standard,

Continued on page 31



If you answer Yes to two of these questions,

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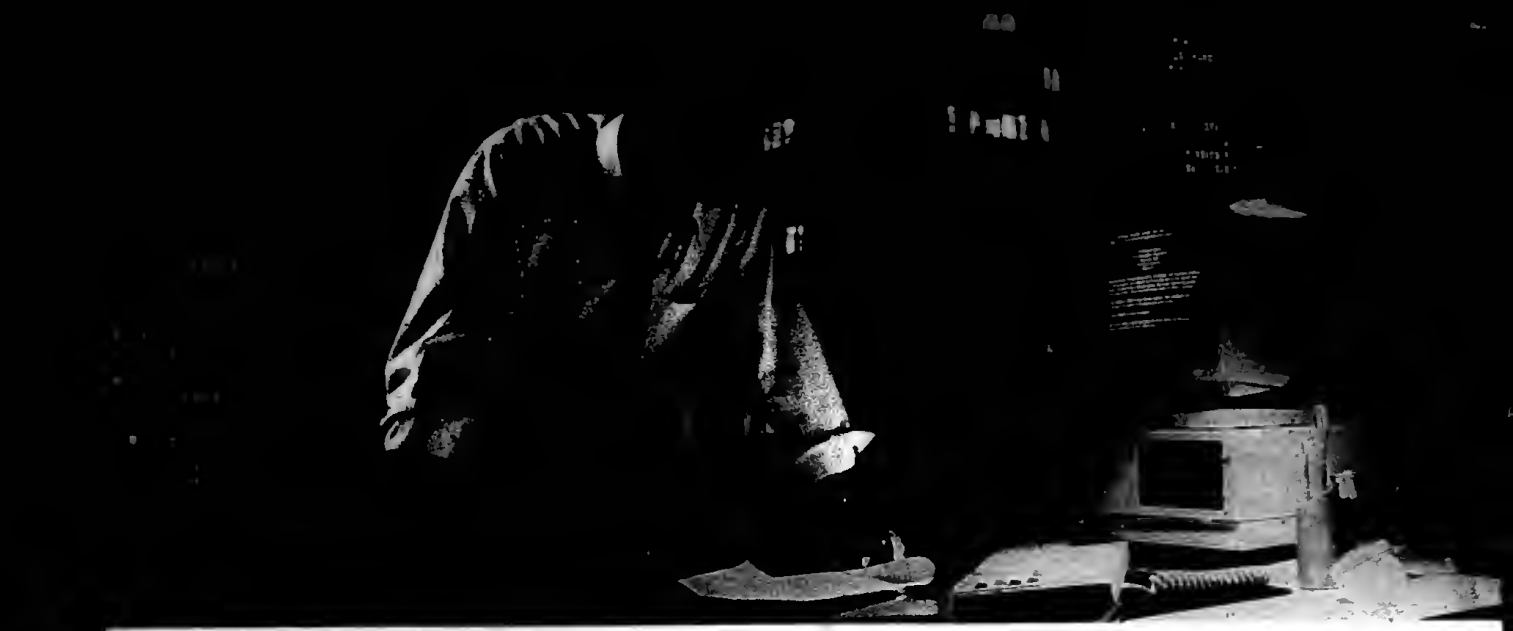

"Taiwan's down again.
Somehow this is going to be my fault."

When the overall reliability and transmission quality of your data services are critical to your success, the services you choose for your company can be vitally important.

But it is nice to know you can depend on the AT&T Worldwide Intelligent Network for your communications services between the U.S. and other countries. This network is maintained internationally through the cooperation of PTTs around the world to provide high-performance transmissions.

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SMALL TALK

William Brandel

Unix winners and losers

The Open Software Foundation's (OSF) graphical user interface selection isn't for workstation users only. A closer look at the interface's ramifications indicates that it will have a distinct effect on the personal computer industry as well.

For those of you who were not glued to industry happenings over the holidays, the selected graphical user interface is a hybrid that includes DEC's X Window User Interface (XUI) as its application programming interface and HP's and Microsoft's Common X Interface (CXI) as its user interface (see story page 25). CXI is the look-and-feel portion of Presentation Manager/X (PM/X) and will essentially be a port of the Presentation Manager for OS/2.

The announcement is a boon to HP and Microsoft because it legitimizes their PM/X efforts. But more important is the challenge the OSF poses to Presentation Manager and OS/2.

Because of the Presentation Manager's current shortcomings and the viability of the PM/X and XUI hybrid, PC users may finally be given a sound reason to consider running Unix

Continued on page 32

Practicing what they teach

Math educators tool around with PCs, making learning fun for students

BY SALLY CUSACK
CW STAFF

Even math teachers have trouble practicing what they teach from time to time. But now, teachers at the University of Florida in Gainesville, Fla., are themselves using personal computers to learn how to turn kids on to numbers.

The PCs run software called ESC Elementary and Middle School Mathematics Curriculum, which is marketed by Education Systems Corp. in San Diego, Calif.

According to Mary Grace Kantowski, professor of mathematics education at the university, the program allows teachers to evaluate and practice the school's mathematics curriculum before introducing it into the classroom.

The program is unusual, she said, because "we're not teaching teachers about the computer; we're teaching them with the computer, so they can go back and teach their students with the computer."

Math overhaul

Kantowski, who is a 32-year teaching veteran, explained that the National Council of Teachers of Mathematics is developing new curricula and evaluation standards for grades one through 12.

More emphasis is being placed on teaching prealgebra, geometry, probability and statistics.

Kantowski added that many middle school teachers are not prepared to teach these subjects at that level.

Middle school teachers are also more prone to suffer computerphobia and misconceptions about the technology, Kantowski added.

If they are familiar with the personal computer, they tend to view it more as a word processor or number cruncher, not as a vehicle or medium for delivering instruction.

She also pointed out that most teachers rely on textbooks — not technology — as an integral component of their instruction. Student teachers learn to teach with textbooks by designing lessons and practice teaching before they go on to actually teach a class of their own, she said.

"This program was designed to continue that experience but with software curriculum," Kantowski said. "It shows teachers how to extend the curriculum on the computer into the classroom."

She said she feels that one of the most valuable aspects of the program is that it gives teachers an opportunity to work extensively with material before they have to teach it.

Learn by seeing

Kantowski said the program's use of sound and colorful graphics is especially valuable to student teachers because it is "much more effective to be able to rotate a cube in actual 2-D or 3-D."

During the upcoming spring semester, Kantowski will instruct several area teachers two days per month on the system. The teachers will first learn the content and then construct material. Their goal is to learn how to present and integrate what they have learned into classroom activities.

The ESC program comes in a compact-disk format and is currently running on a local-area network at the university. The LAN consists of IBM Personal System/2s and Tandy Corp. personal computers, each with 640K bytes of memory.

Top sellers

Software: Dec. 26-30

1	Lotus' 1-2-3
2	Ashton-Tate's Multimate Advantage II
3	Software Publishing's Harvard Graphics
4	WordPerfect Corp.'s WordPerfect 5.0
5	IBM's Displaywrite 4
6	IBM's DOS 3.3
7	Fifth Generation Systems' Fastback Plus
8	Software Publishing's Professional Write
9	Borland International's Paradox 2.0
10	Ashton-Tate's Dbase III Plus

SOURCE: CORPORATE SOFTWARE, INC.
CW CHART

SOFT TIPS

Merging safely

When merging an Ashton-Tate Corp. Multimate file with a Dbase file, make sure the field names in the merge document are typed in exactly the same way as the field names in the Dbase file appear.

Multimate will not merge correctly if the field names are different, even if the cases are different.

Information provided by Corporate Software, Inc., a Westwood, Mass.-based software reseller.

Ami melds graphics, word processing

BY WILLIAM BRANDEL
CW STAFF

End users say they can bridge the gap between word processing and desktop publishing software with Samna Corp.'s Ami, a graphics-based word processing package.

Ami, which makes use of Microsoft Corp.'s Windows, enables users to perform graphics-oriented functions with a what-you-see-is-what-you-get type of environment.

John Fischer, corporate office systems manager at Helix Technologies Corp. in Waltham, Mass., needed a product that could begin adding windowing to his corporate office systems. Fischer said he is using Ami to ease these migration efforts.

"We're not a big Windows house and are still trying to decide what areas we want to use Ami in," Fischer said. "As [Ami] includes features of both word processing with some of the flavors of desktop publishing, we are relying on it while we're still in an in-between mode. There isn't another product like it on the market."

Andy Lipscom, president of East Valley Graphics, Inc., located in Rydal, Ga., agreed. "Unlike Microsoft's Write program, Ami performs real word processing under Windows," Lipscom said. "Samna has done an excellent job of taking advantage of windowing to create a word processing product."

Samna Corp.'s Ami

Price: $149

- Runs on Intel 80286 or 80386 systems.
- Requires DOS 3.0 or higher, 640K bytes of memory and a hard disk.

Lipscom, whose company designs graphics-based software, is using the product to process documents. He believes that Ami can replace Xyquest, Inc.'s Xywrite as *the* document processing system in the personal computing environment.

"Xywrite suffers from its ad hoc status," Lipscom said. "They started with a good editor and then added every conceivable feature available."

Negotiating through Xywrite's array of features is the key problem. "With Xywrite, you have to figure where the hell each of its added features are and then figure out how to use them. Ami was designed with ease of use in mind," he said.

But, Lipscom added, Ami is not perfect. Lipscom cites the users' inability to change documents from Xywrite to Ami as the product's most obvious flaw. This obstacle stems from the fact that Ami lacks an import file box that will accept the old Xywrite documents. But Lipscom said that he is aware that Samna is working on correcting this problem.

A Samna spokeswoman said that the interim version of Ami, which will precede the release of an Ami Professional offering, will enable the user to convert Xywrite files. The spokeswoman said that in the meantime, the product will accept Xywrite files in ASCII.

The Ami product, priced at $149, allows the user to select from pull-down menus and command options and get a real perspective of the document before it is printed.

The program also includes 25 different style sheets that can be used for layouts of memos, business letters, newsletters and reports.

Ami will run on an IBM Personal Computer AT or Personal System/2 and compatibles with Intel Corp. 80286 or 80386 microprocessors equipped with 640K bytes of random-access memory.

Jaguar revs

FROM PAGE 29

conditional and trace breakpoints; minimum recalculation technology, which speeds execution of an application; expanded memory support to enable end users to use worksheets too large for conventional memory; and support for Intel Corp. 8087 and 80287 math coprocessors.

These features are also included in King Jaguar, which retails for $595. It features a user-defined function that enables developers to define in C language functions not available in 1-2-3 and virtual memory that expands automatically to a hard disk when the application exceeds random-access memory.

Jaguar, King Jaguar and the compiled applications run on the IBM Personal Computer, XT, AT, Personal System/2 and compatibles with at least 384K bytes of RAM and require IBM PC-DOS or Microsoft Corp. MS-DOS 3.0 or higher.

Brandel

FROM PAGE 31

on their PCs.

As already voiced by users, Presentation Manager is flawed. It lacks device drivers and, therefore, does not yet support many of the popular monitors and printers. It lacks any software applications support. It requires a ton of memory and is optimized for Intel 80286-based machines.

In short, users must spend a lot of money for a system that really does not do anything. This means a slow ramp-up speed for Presentation Manager and affords a window of opportunity for the Unix community.

War is still on

After slowly gaining momentum and then being ravaged by consortium wars, one large faction in the Unix community has agreed on an interface based on the industry-standard X Window System.

According to major DOS vendors, the OSF interface has similar memory requirements to Presentation Manager.

But unlike Presentation Manager, the OSF selection is optimized for the machines it runs on. This gives the OSF interface a technical advantage and could possibly accelerate the Unix momentum in the PC market.

Some may argue that a Unix-based interface and its technical specifications are not significant to the PC market today.

But according to Tom Kucharvy, president of Boston-based Summit Strategies, who analyzes the high-end PC market, half of Intel processors being sold today can in fact run Unix.

With a solid interface technical specification to write to, it is entirely feasible that solid Unix applications for the PC could make it to market in the same time frame as those written specifically for Presentation Manager. Accordingly, those applications developed for Presentation Manager can be converted to run PM/X without a total rewrite.

These developments mean that Unix is now poised to make a run on the PC and also that users have an interface alternative that is superior to what is currently being offered to them.

Meanwhile, Presentation Manager faces some serious challenges in the PC industry's near future.

Brandel is a Computerworld senior writer.

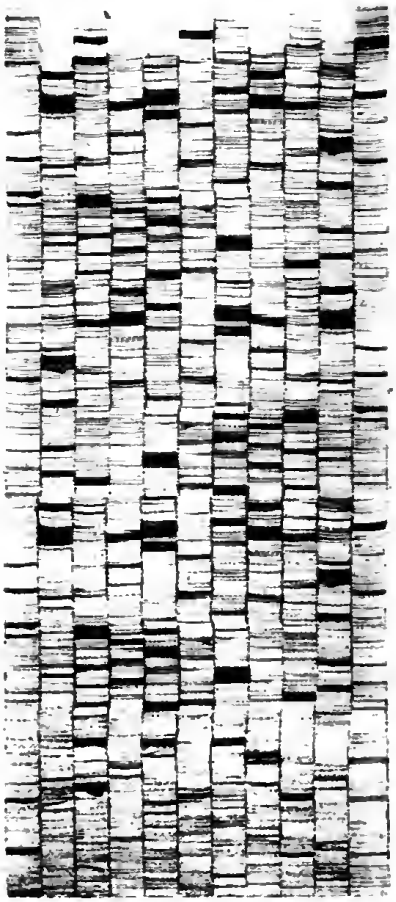
Barney

FROM PAGE 29

- Lotus, which has about 10 products still on the vaporware list, will ship about half of those. Release 3.0, 1-2-3/M, 1-2-3/G (very late in the year) and portions of Lotus DBMS will ship. The next release of Symphony, 1-2-3/Mac, 1-2-3/Unix and Notes probably won't. Lotus will have a decent year but a better 1990.
- Microsoft's relationship with IBM will show more cracks, but Microsoft will prosper anyway.
- A 386 version of OS/2 complete with the Presentation Manager interface will not ship, and no one will miss it.
- OS/2 itself will have a slow year. Presentation Manager applications will ship, but few will buy them.
- Unix will gain a lot of attention but will be used on few PCs.
- Windows will grow but will still be used on a minority of PCs.
- Dbase IV will get many of its bugs fixed and will sell well. However, Ashton-Tate will still lose market share to both new systems and ones based on older mainframe architectures.
- The chairman of at least one of the top five software firms will leave under pressure.
- The Mac will have a good year, but it will be the last year of strong growth for that machine once PCs and workstations start gobbling up Apple sales.
- Mainframe software kingpin Computer Associates will buy a major micro software firm.
- My infant daughter will not learn to use a computer.

Barney is a Computerworld senior editor, microcomputing.

Theirs.



The second most reliable impact printer did this much before it stopped. It wound up in the repair shop after 7,000 hours or ten months of printing.

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NEW PRODUCTS

Systems

Wang Microsystems, a division of Wang Laboratories, Inc., has extended the high end of its PC 200/300 series with the introduction of two Professional Computer models.

The 16-MHz **PC 381** reportedly provides IBM Personal Computer AT compatibility and was designed to meet basic customer requirements in the business personal computer market. Pricing starts at $3,195.

The **PC 382**, running at 20 MHz, is especially suited for graphics and communications applications, the vendor said, and is priced from $3,450. Each system features an eight-slot chassis and offers 1M to 4M bytes of base memory, with upgrades to 16M bytes.

Both products are offered in a variety of configurations, including a broad range of memory, disk controller, fixed- and removable-disk storage and monitor support options.

Wang Microsystems, 10 Technology Drive, Lowell, Mass. 01851. 800-962-4727.

Software applications packages

Imagetech Corp. has acquired rights to the recently introduced **Marvin Software** personal computer-based imaging product.

The software reportedly enables users of IBM Personal Computer ATs, Intel Corp. 80386 machines and compatible systems to scan text and graphics documents, as well as store, retrieve and work with the digitized images. The package is menu-driven and mouse-oriented and runs under Microsoft Corp.'s Windows and MS-DOS. It operates with Canon U.S.A., Inc. and Fujitsu America, Inc. desktop scanners.

Marvin Software costs $695. Marvin Plus, which includes data compression and decompression logic functions, is priced at $895.

Imagetech, 1864 Northwood Drive, Troy, Mich. 48084. 313-362-3141.

Software utilities

A mouse enhancement product for users of Xyquest, Inc.'s Xywrite III Plus package has been announced by **Galactic Software, Inc.**

Called **Xymouse 2.11**, the software reportedly accelerates word processing tasks and integrates hard-disk inventory control functions. A hard disk is strongly recommended but not required.

Xymouse 2.11 costs $149.

Galactic, Suite 211, 2600 Philmont Ave., 1 Fairview Plaza, Huntingdon Valley, Pa. 19006. 215-947-0930.

Macintosh products

All-American Software Development Corp. has released an Apple Computer, Inc. Hypercard database management application.

Tabularium, according to the organization, was designed as a tool for importing data from Apple's Macintosh, DOS and mainframe databases into Hypercard.

The software imports to new stacks or adds to existing stacks, the vendor said, and is priced at $49.95.

All-American Software, 5612 International Pkwy., Minneapolis, Minn. 55428. 612-537-8910.

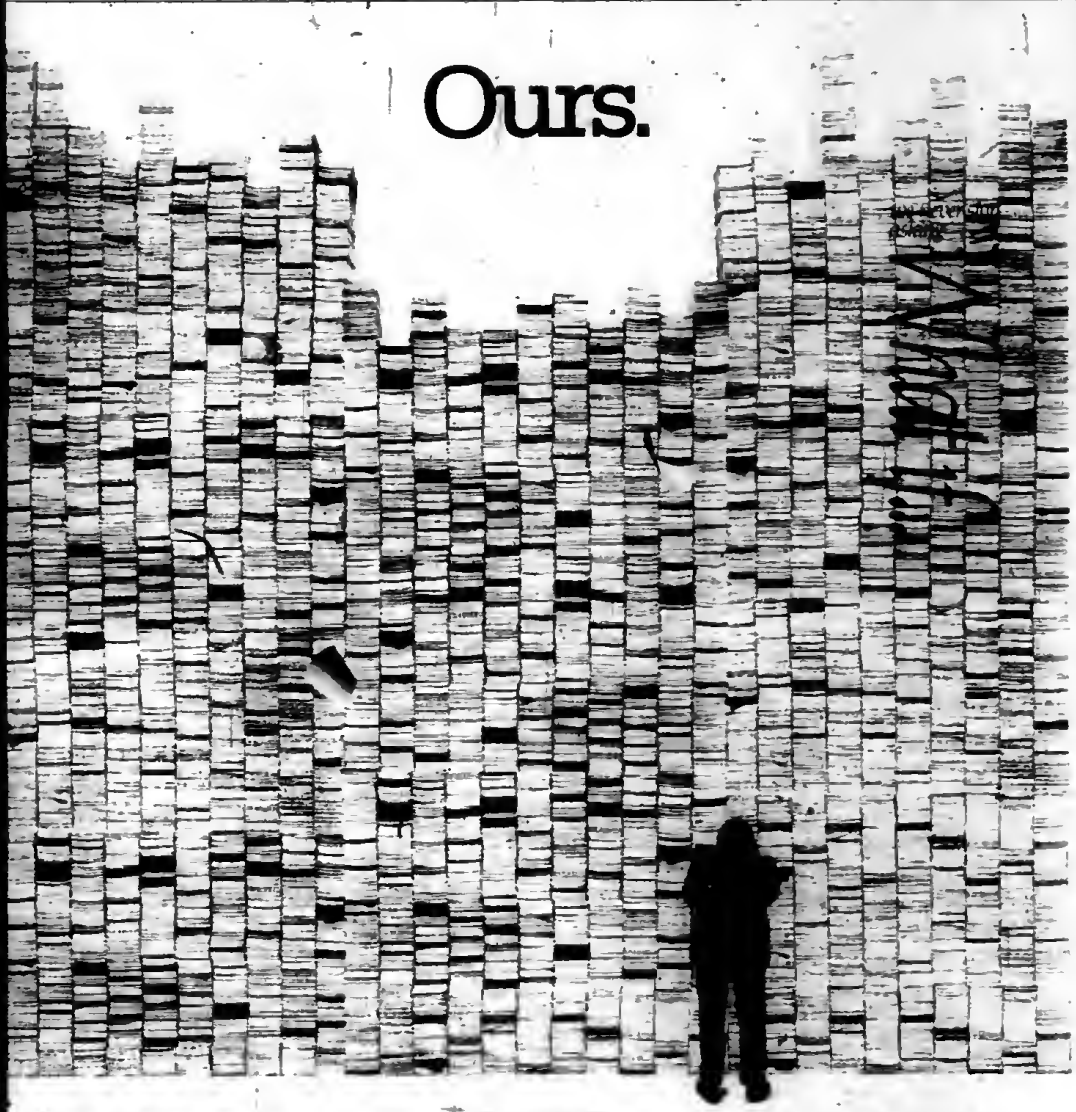
A color add-in board for Apple Computer, Inc.'s Macintosh SE system is available from **Orchid Technology, Inc.**

The **Colorvue SE** reportedly connects a Macintosh II monitor, an IBM Video Graphics Array monitor or a multisync monitor to the Mac SE.

According to the vendor, the product can provide up to 16 colors from a 256,000-color palette and is compatible with most eight-color Macintosh applications.

The Colorvue SE costs $695.

Orchid Technology, 45365 Northport Loop W., Fremont, Calif. 94538. 415-683-0300.



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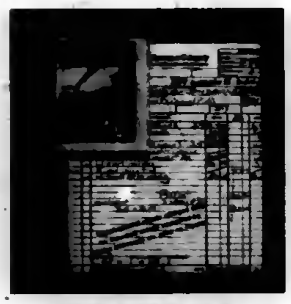
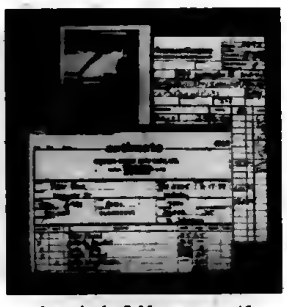


There's a fender bender on a freeway. The adjuster comes out and takes a picture of the damage. And signs off on an adjustment.

The handwritten document and the photo – the images – both go back to the home office via electronic mail.

Touch a button and you have a data window, a text window, an image window right in front of you. Presto!



A guy in the field wants to verify the estimate. Click! The adjuster's handwritten report, the estimate, and the photo are right there on the screen.

Actual Wang computer screens shown here.

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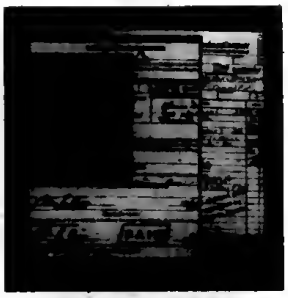
And that's no accident.



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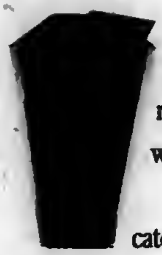

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DATA STREAM

Thomas L. Nolle

LANs: Closet data centers?

When asked in a 1982 survey what negative aspect of personal computer growth they feared most, data processing managers fretted over a potential loss of central information control. The managers believed PCs would encourage the "privatization" of information by erasing the traditional link to the central computer complex.

This image has stood the test of time: Recent advertisements by a minicomputer vendor portray this same image of data banditry but in the context of local-area networks.

We've survived the wholesale movement of corporations to PCs without realizing the worst of those 1982 fears, but most businesses can point to episodes in which there were problems because of the gradual diffusion of data into nonintegrated systems.

In fact, the problems that can occur when everyone owns a private database — unknown to others and not subject to any form of audit or verification — are one reason why the integration of work groups via PC LANs is a growing priority. But might the cure be a step toward a more serious disease?

Take a real-life example. In 1983, a major New York bank had to create special batch files to preserve data on its LANs in original form. Standard fea-

Continued on page 40

Mac link replaces mail at Arco

Remote gas depots uploading data to headquarters Appletalk LAN

BY JULIE PITTA
CW STAFF

LOS ANGELES — Atlantic Richfield Co. is looking to tie field operations to its headquarters with a modem-based link between depot users' Macintoshes and Macs on an Appletalk local-area network located here.

Today, users at Arco's gas depots are mailing their Apple computer, Inc. Macintosh disks filled with shipping information to the main office of Arco Products Co., the marketing distribution arm of Arco, headquartered here. The information is then loaded into Macs and sent to the company's Amdahl Corp. mainframe.

Mailing the disks from depots to headquarters has proven cumbersome and time-consuming, said Tom Mullaney, manager of systems and administration at Arco Products. So Arco is looking at Portland, Ore.-based Infosphere, Inc.'s Liaison, software that would allow remote users to send information electronically from the depots into the home-office Appletalk network.

Macs on the Apple LAN are linked via "plain old telephone wire," according to Mullaney. There are two LANs composed of 50 Macintosh SEs at headquarters and two more connecting 30 Mac SEs at a separate site in Los Angeles, which serves as the main office for Arco's Paypoint system. Paypoint allows consumers to buy gas using their automated teller machine cards.

The four LANs are linked using Hayes Microcomputer Products, Inc.'s Interbridge, an add-on device that links multiple Appletalk networks via Hayes modems.

The Appletalk LAN at Arco Products' headquarters is connected to an Amdahl host using Tridata Corp.'s Netway 1000 gateway. The host stores customer files, pricing and tax charges and daily production records.

One obstacle to deploying the electronic file transfer application between the remote and local sites is the depots' current use of 2,400 bit/sec. modems.

The company needs to install 9.6K bit/sec. modems to surmount the current "interminable wait for data transfer," Mullaney said. He said he hopes to solve this problem with the latest release of the Applefax Modem, which is said to support file transfer at speeds up to four times faster than standard 2,400 bit/sec. modems.

Applefax enables users to send facsimile files to and from virtually any type of fax machine. It also enables users to exchange data files with other Macs equipped with Applefax modems. It was taken off the market in October to fix bugs in the software and firmware, but the revised version will ship as of Macworld later this month, according to Apple.

Other facets

An electronic link between depots and headquarters is only one of several ways that Arco is employing computers to increase the efficiency of its operations.

Using Macdraw II, Apple's drawing program, depot staff members create diagrams of various Arco service stations for delivery-truck drivers. "That way, he knows where the tanks are," Mullaney explained. "He can figure out the best way to pull in to reach them." The maps

Continued on page 38

Data seen increasing on T1 links

BY ELISABETH HORWITT
CW STAFF

MARLBORO, Mass. — Data communications, in particular IBM Systems Network Architecture transmissions, will make up an increasing percentage of the traffic carried by T1 multiplexers in the next two years, according to a recent study.

"The Multiplexer Market, 1988 — an End-User Assessment" is a study put together by The Market Information Center, Inc.'s Comm/Surv group.

The research firm, based here, surveyed approximately 325 U.S. organizations, of which nearly 30% used T1 products and services. Of those companies, 26.4% were Timeplex, Inc. users; 12.1% were AT&T users; 12.1% were General Datacomm, Inc. users; 7.7% were Digital Communications Associates, Inc. users; and 7.7% were Network Equipment Technologies, Inc. users.

More than 15 additional vendors supplied the remaining

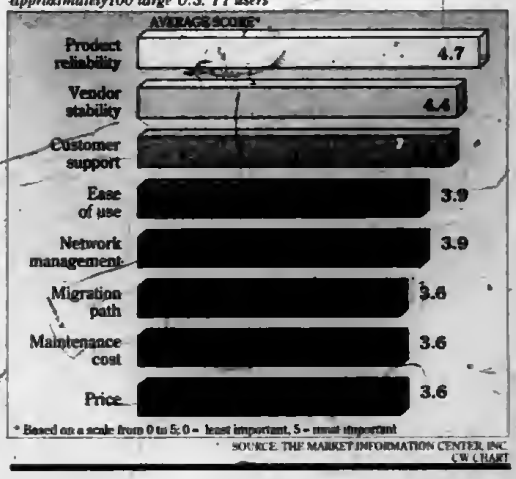
Continued on page 40

Inside

- U.S.-Soviet packet-switching link opened. Page 38.
- Aussie firm building world's largest private digital backbone network. Page 38.

T1 and multiplexer shopping list

Reliability and vendor support come first among criteria cited by approximately 100 large U.S. T1 users



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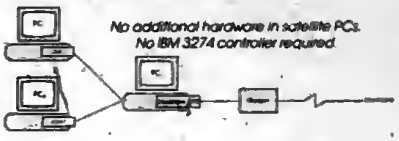

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BIT BLAST

U.S.-USSR network opens

Jan. 1 saw the inauguration of a packet-switching data network between U.S. and Soviet Union users. The net was provided by **San Francisco/Moscow Teleport, Inc.** in cooperation with the **National Center for Automated Data Exchange** of the USSR. The network is said to make U.S. database services available to Soviet subscribers. It is accessible through several local carriers' services, as well as through **Globenet, Inc.**

Ungermann-Bass, Inc. has contracted to purchase IBM Systems Network Architecture products from **Rabbit Software Corp.** Under the agreement, the network vendor will pay Rabbit royalty fees over a two-year period.

Infotron Systems Corp. recently made its first shipment of Streamline 45s, which it claims are the first T3 networking multiplexers to be marketed. Two of the units, which reportedly support transmission speeds of up to 45M bit/sec., were delivered to **Sungard Recovery Services, Inc.**, a disaster-recovery service vendor.

Cabletron Systems, Inc. has inked a pact with **LSI Logic, Inc.** to develop a 10BaseT-standard transceiver chip. Cabletron will have sole rights to market the new chip, which will support 10M bit/sec. Ethernet over unshielded twisted-pair cable.

3Com Corp. and France's **Telesystemes Reseaux** have signed an agreement to jointly develop an X.400 gateway and X.25 router. 3+Open Reach/X.400 and 3+Open Internet/X.25 reportedly will enable a mix of personal computers, including IBM Personal System/2s and Apple Computer, Inc. Macintoshs on 3Com networks, to exchange electronic mail via public E-mail systems and proprietary systems such as IBM's Professional Office Systems and Digital Equipment Corp.'s All-In-1. The two products are slated to be available in French and English by mid-year.

Prime Computer, Inc. has announced an X.400 tool kit said to allow 50 series supermini software programmers to develop E-mail, gateway and other messaging systems within local- and wide-area networks. Information can be formatted as text, graphics, digitized voice, image, facsimile and electronic data interchange transactions.

Future kits will support Unix-based systems and Ethernet LANs, the vendor said. The second phase of Prime's X.400 strategy entails an end-user mail implementation, with a PC interface slated to ship late this year.

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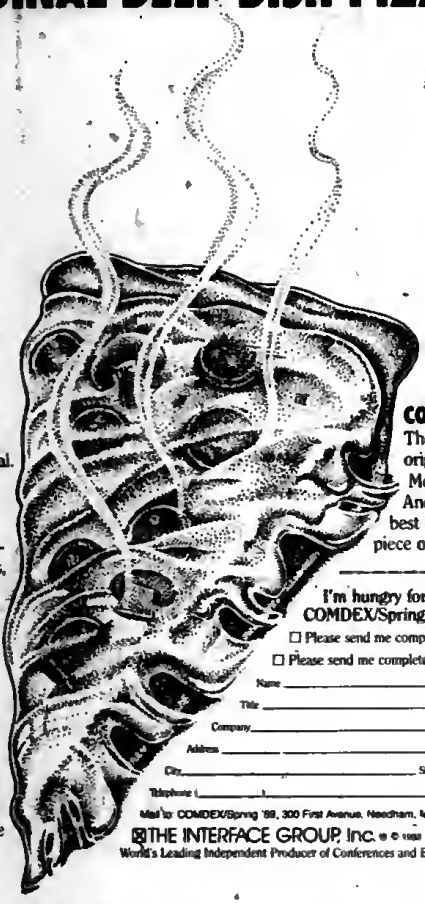

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Big doings down under

TOORONGA, Victoria, Australia — Coles Myer Ltd., a retail company based here, is building what reportedly will be the world's largest private digital backbone network.

The network will link Coles Myer's approximately 1,500 retail outlets throughout Australia, as well as planned sites on other continents, the company said. It is expected to supply the retailer's voice, data, image, text and video communications needs through the late 1990s.

Datacraft Australia Pty. Ltd. will design and install the backbone, which will be based on T1 multiplexers from Newbridge Networks Corp. The backbone will support the company's IBM Systems Network Architecture network, its Digital Equipment Corp. Decnet of Vaxclusters and a voice network made of NEC Corp. NEAX 2400 digital private branch exchanges.

One key feature of the Newbridge/Datacraft proposal was the use of Newbridge's 3612 Narrow Band Multiplexer, which allows voice and data transmissions to be integrated over one channel that supports 64K bit/sec. or lower rates, Newbridge said.

Mac link

CONTINUED FROM PAGE 37

are stored in a graphics database.

Performance information — including the number of miles trucks have traveled, how many hours those journeys took and the number of hours employees have logged on those trips — is recorded using Microsoft Corp.'s Works. Other data reported includes a daily record of how much gasoline is delivered and the safety records of each driver. Mullaney said between 400 and 450 gallons of gas are shipped monthly from Arco's storage depots. The bulk of the performance information is entered into Macs at those sites.

"They do the groundwork by accumulating the information that goes into our overall performance analysis," Mullaney said. That data is vital in determining the price of gas to the service station franchisees, he noted.

WITH SO MANY DIFFERENT OPERATING SYSTEMS TO CHOOSE FROM, WHERE DO YOU DRAW THE LINE?

Nolle

CONTINUED FROM PAGE 37

tures such as record and file locking didn't stop people from making private copies of files and modifying them — resulting in multiple, inconsistent versions. No one had anticipated the problem, and it cost thousands to correct.

The bank was involved in an early distributed processing application, one of the very first to use PCs. The fact that the networks of that time did little to provide formal support for central database protection led users, vendors and consultants to approach with caution the development of applications that relied on those databases.

But this year, LANs will have technical facilities allowing them to be what many have claimed they were all along: substitutes for departmental or central information processing resources. That could give users a false sense of security in dealing with the kind of problem the bank had six years ago.

In products like Novell's System Fault Tolerance Netware, Microsoft's OS/2 LAN Manager, IBM's OS/2 LAN Server and the growing number of SQL servers, the state of LAN technology has advanced to create for the first time an environment in which basic DP controls over information storage and retrieval can be applied. These products provide transaction backout, ghosting/duplexing of disks to maintain parallel databases and activity audit trails developed through centralized smart servers. Such features will surely eliminate some of the barriers to making a LAN the equal of a minicomputer or mainframe.

Vendor literature seems to promise an environment that takes care of itself. It's a wonderful dream, but this encourages users to not think about the technology, and that's always bad. These new features are simply tools. The questions are who will apply them, enforce their use and regularly test their operation to ensure their continued integrity.

Nearly half the LANs in use today have no real centralized administration function. Sure, most have a designated administrator, but that person often does little more than assign passwords and access rights. In one manufacturing company, the administrator resigned and the position remained open for almost six months because no one knew it had ever been filled.

Get serious

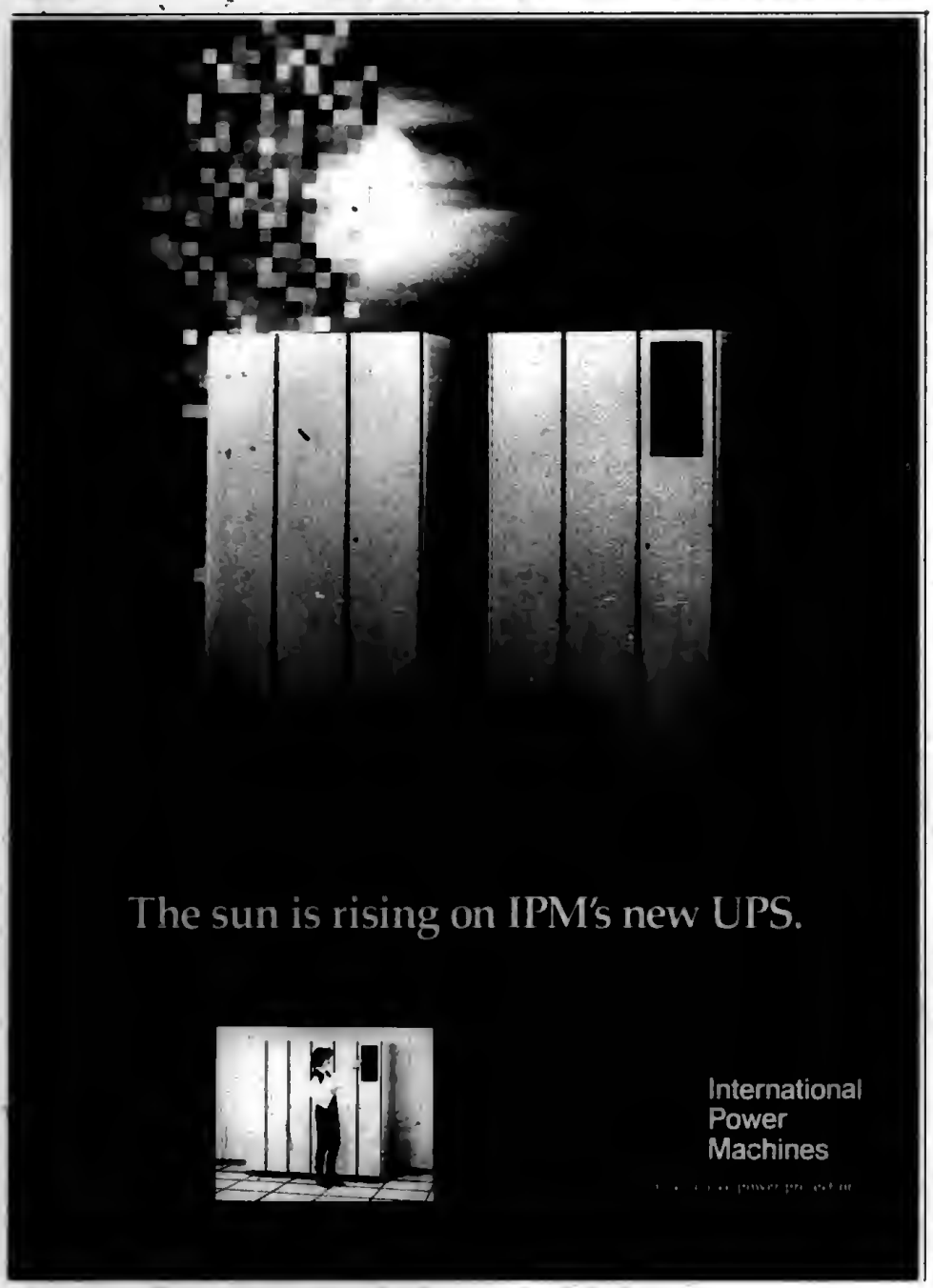
If LANs are to grow into real work group support status, then businesses must begin to take LAN administration seriously. Few businesses would permit a minicomputer to support 100 on-line users without any operations staff, yet these same users will permit LANs twice that size to exist without formal administration. If a LAN is a substitute for walking a disk to the next office, this may be survivable; if the LAN functions as distributed work group support technology, it may not be.

Companies need to appoint a qualified administrator who participates in critical application design decisions, selection of application software, review of proposed configuration changes that might affect the community of users and more. In short, the LAN needs a DP specialist to administer the collective data processing activities it is called on to support.

Perhaps the reason that this almost self-evident conclusion seems to be resisted in practice is that PCs and LANs are seen by end users as a way to wrest control of their destiny away from bureaucratic MIS types. Having deposed one unwanted monarch, these users are reluctant to raise up another.

But ultimately, there is only one choice. OS/2, LAN Manager and Lan Server, database servers, gateways, bridges and other emerging technologies are pulling the LAN away from the transparent and populist piece of wire that so effectively cut back on pedestrian traffic in work groups. To the extent that LANs are substitute DP resources, they must be administered as such.

Nolle is president of CIMI Corp., a communications consulting company based in Haddonfield, N.J.



T1 links

CONTINUED FROM PAGE 37

companies' T1 facilities, the research firm said.

The average amount of traffic generated by companies surveyed consisted of 52% voice, 47% data and 1% video, the study found. Based on user responses, however, Comm/Surv predicted that in two years, voice traffic will make up only 47% of total traffic, while data's share will increase to 51%.

The makeup of data communications traffic will also change over the next two years, the study found. The 1988 survey found that, on average, user traffic was 29% asynchronous, 20% bisynchronous and 44% IBM Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC), with the remainder a variety of data types.

Based on user responses, the study predicted that during the next couple of years, asynchronous traffic will decrease to 27% and bisynchronous to 13%, while SNA/SDLC traffic will account for approximately 50% of the whole.

Product reliability, vendor stability and customer support were the top three criteria that users use in choosing a T1 multiplexer, the study found (see chart page 37).

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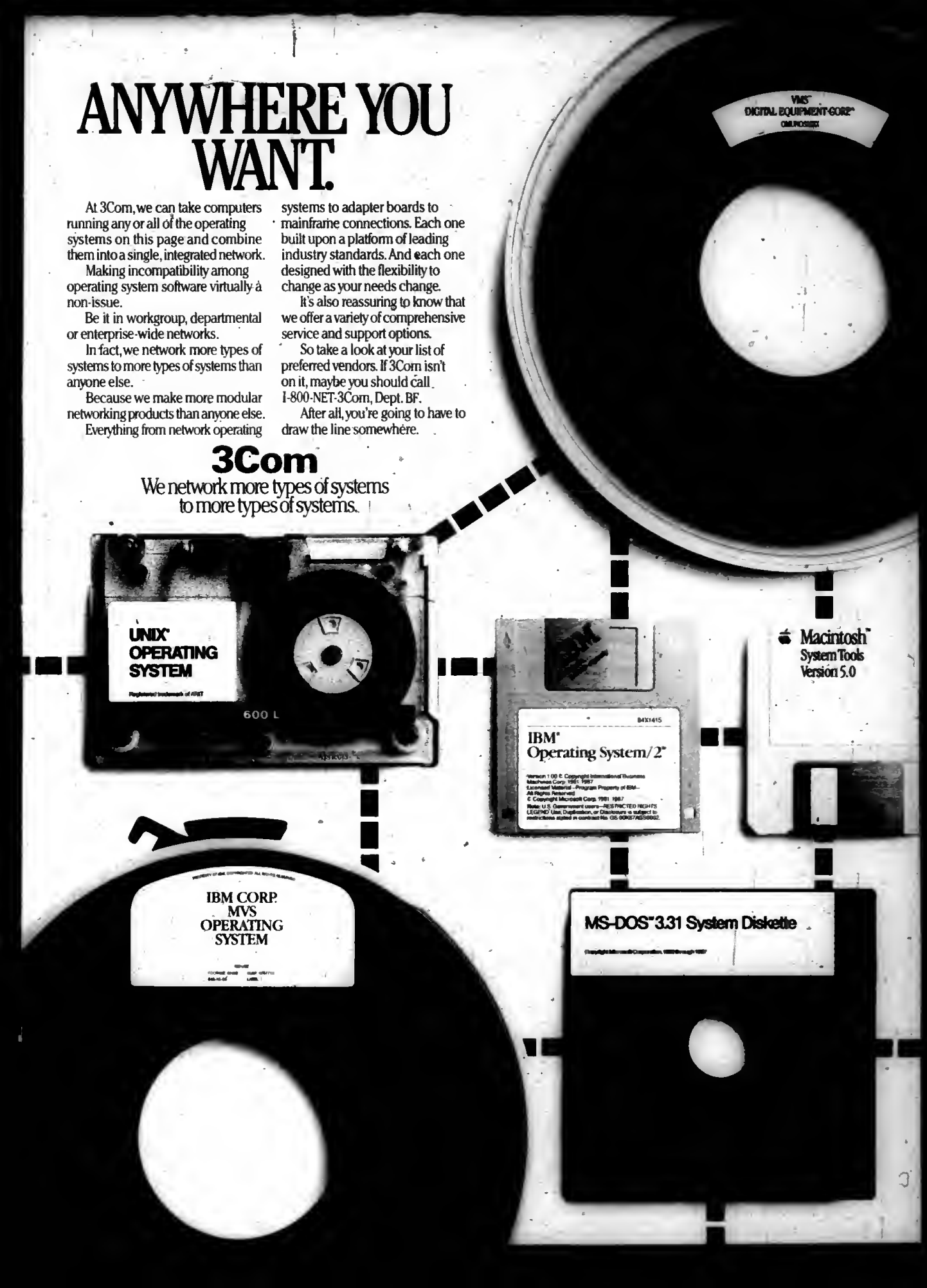

NEW PRODUCTS

Local-area networking hardware

Plus Development Corp. has announced an expandable hard-disk subsystem for personal computer local-area networks.

Called **Plus Impulse**, the drive reportedly achieves a 12-msec effective access time and offers the ability to connect up to 32 drives onto a single PC LAN server. The product provides a maximum data-transfer rate of 4M byte/sec., according to the company.

Plus Impulse is priced from $995 to $1,379, depending on drive capacity and components.

Plus Development, 1778 McCarthy Blvd., Milpitas, Calif. 95035. 408-434-6900.

A high-capacity storage server for technical workstation networks has been announced by **Epoch Systems, Inc.**

Said to offer Sun Microsystems, Inc. Network File System compatibility, the **Epoch-1 Infinitestorage Server** combines magnetic and optical disk drives to provide 150G bytes of storage capacity.

The servers are available in three versions and are priced from $95,000 to $450,000 depending on configuration and storage requirements.

Epoch, 313 Boston Post Road W., Marlboro, Mass. 01752. 617-481-3717.

Local-area networking software

Automated Design has announced its **Windows Workstation** family of local-area network utilities for users of Microsoft Corp.'s Windows and LANs.

The software reportedly includes an integrated menu system as well as a network printer and background security control functions.

The system may be purchased modularly or as a package, with prices ranging from $695 to $1,195.

Automated Design, Suite 112, 133 Johnson Ferry, Atlanta, Ga. 30068. 404-988-0969.

E-Soft, Inc. has revised its multiline bulletin-board system and communications handler.

Version 2.1 of **The Bread Board System** (TBBS) reportedly offers multiline operation of up to 16 incoming telephone lines on a single IBM Personal Computer XT, PC AT, Personal System/2 or compatible. According to the vendor, enhancements have been made to the software's menu operations, message bases and file-transfer functions.

TBBS 2.1 costs $895. A single-line version is also available for $299.95.

E-Soft, Suite 2550, 15200 E. Girard Ave., Aurora, Colo. 80014. 303-699-6565.

A software-based network security system that offers boot protection through controlled access to the hard disk has been introduced by **RYBS Electronics, Inc.**

Called **Gatekeeper**, the product runs on all IBM micros and compatibles; it works with IBM's PC-DOS 2.0 through 3.3 and most versions of Microsoft Corp.'s MS-DOS, the vendor said.

Gatekeeper costs $79.

RYBS, 2950 Central Ave., Boulder, Colo. 80301. 303-444-6073.

Links

A communications processor for IBM Systems Network Architecture (SNA) users has been announced by **BBN Communications Corp.**

The **T/100 HEP** is a high-speed, host-end processor that connects SNA hosts and front-end processors to a BBN private-jacket network, the vendor said. The unit reportedly supports SNA connections at speeds up to 256K bit/sec. and is priced from $50,000.

BBN, 150 Cambridge Park Drive, Cambridge, Mass. 02140. 617-873-2683.

3X U.S.A. has announced its **3X-Link16** system, which reportedly connects up to 16 personal computers, laptops and IBM Personal System/2s and offers background sharing of peripherals.

The system consists of software, a parallel-port add-on device and a 12-ft cable, the vendor said; files can be transferred in background mode at $500,000 bit/sec.

The product is priced at $199 for the first two stations and $139 for each additional station.

3X U.S.A., One Executive Drive, Fort Lee, N.J. 07024. 201-592-6874.

A software package that allows IBM Personal Computers, PC XTs, ATs and compatible systems to act as an X.25 bridge between multiple Ethernet local-area networks has been announced by **Emerging Technologies.**

Called **ET/Bridge**, the product reportedly works in conjunction with off-the-shelf communications cards to convert PCs into effective Ethernet X.25 bridge nodes. Each PC is said to be capable of supporting up to 64 remote LANs for an unlimited number of users at speeds up to 64K bit/sec.

Et/Bridge costs $1,095.

Emerging Technologies, P.O. Box 1525, Mineola, N.Y. 11501. 516-742-2375.

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It's a computer-based contest to win the best and brightest

BY GLENN RIFKIN

"Here, there's no bottom-line measure; we're trying to produce knowledge, not profits."
James Poage
Vice-Provost for Computing
Dartmouth College

Knowledge may not translate easily into dollars and cents, and institutions of higher learning may disdain terms such as competitive advantage, but a bottom line does exist even for those who dwell in ivory towers. And there is an increasing awareness among information systems professionals on America's campuses that the bottom line is dependent on information technology.

"The currency of academia is reputation," says Kenneth King, president of Educom, a consortium of 574 universities that deals with information and technology issues for higher education. In order to attract and retain the best faculty and staff in an ever-shrinking talent pool, universities and colleges are finding that they must offer more than picturesque quadrangles and fully stocked libraries. State-of-the-art computing is becoming a priority requirement for campus America.

Few university information systems executives would argue with the forecast offered by John Sculley, chairman and chief executive officer of Apple Computer, Inc. at a recent meeting of Cause, the professional association for computing and information technology in higher education. "The real structure of universities in the 21st century will not be bricks and mortar," Sculley said. "It will be information systems."

In fact, if anything, some analysts might advance the timetable slightly. King, for example, says he believes that "the effective use of technology will play a major role in a school's ranking in 10 years."

RANIELLO PICARELLI

Educom's *King sees computing as a campus cornerstone*

Achieving the levels of technological sophistication that will soon be necessary to keep up — let alone stand out — will not be an easy task for university information systems executives, however. For most, it will mean an ongoing financial and strategic struggle.

Despite the fact that most technological breakthroughs are spawned on campuses, the average institution of higher learning is well behind its corporate cousins in embracing technology.

The average cost of computing as a percentage of total budget in higher education is just 2.5%, which is up just 1% in the last five years, according to King. "Universities are in an information-intensive business and should track the same as the business world," he says. "But universities on average are five years behind in expenditures."

One problem is that colleges and universities, unlike private industry, cannot always easily measure the benefits of technology and factor them into fiscal plans. Both state and private institutions face financial uncertainty in a time when expenditures on technology should be rapidly increasing.

The financial crunch is particularly acute at state schools, which must depend on the largesse of government officials. Says one campus chief information officer, "The university has identified computing as a high-priority item, and the Board of Regents has endorsed it, but as far as the governor and legislature are concerned, that's a long way from being cash."

As a result, many schools seek relationships with vendors that can provide equipment grants and discounts. "We're cheap, we're always looking for a handout," says Thomas West, assistant vice-chancellor of computing and communications resources for the California State University system. "I wish it didn't have to be that way."

At many schools, including prestigious research institutions, the proliferation of personal computers and workstations has also produced considerable financial nightmares for traditional centralized computing centers. As computing power has become distributed to individuals and departments, the need to buy time on mainframe cycles has diminished, and computing centers that used to support themselves with the surcharges on time-sharing cycles are in trouble.

"It's a major problem, and budgets are being cut," says King, adding that while computer center budgets are dropping, expectations are rising. Researchers, in particular, are demanding access to national academic networks such as National Science Foundation's NSFnet, which gives them time on one of several supercomputer centers in the country.

And money is not the only problem. Information systems professionals on campus face a host of other challenges when they try to extend the reach of technology. Although these challenges vary dramatically depending on the size and culture and funding status of the institution, there are problems that span the whole range.

For example, the toughest assignment at any institution of higher learning is finding consensus in a world of independent thinkers and autonomous groups. "On campus, no one will stand up and insist on anything," says Robert Street, vice-president for information resources

Rifkin is a *Computerworld* senior editor.

INSIDE

Central systems juggle multiple majors
Page 46

Solving campus network conundrums
Page 47

Contest

FROM PREVIOUS PAGE

at Stanford University. "We operate more on the carrot principle than on the stick principle."

Nowhere is the gap in thinking wider than between academic and administrative computing on campus. Not unlike the separation of church and state, these two bastions of campus power have traditionally kept a safe distance from each other. But in the last five years, many campuses have sought to bring the two environments together in hopes of achieving certain economies of scale. Not everyone agrees with the trend, and obstacles continue to plague such a union.

Administrative MIS veterans like Sam Splice, director of telecommunications and administrative systems at the University of Michigan, actively lobby to keep the administrative and academic worlds separate. "Our environment wouldn't work for them, and theirs wouldn't work for us," Splice says. "We'll cooperate where we can."

Illustrating the division between the two sides was the reaction to a proposed merger of Cause (an organization of individuals on the administrative side) and Educom (academic side). At a recent Cause conference in Nashville, Splice, along with a vocal contingent of administrative information systems veterans, worked to keep the two from merging.

"In the academic world," Splice says, "everybody thinks he is a manager. [Academics] want access to everything but they don't want to support the same packages or protocols; they are all over the place."

High expectations

Splice says that academic users want support and response, and they cannot understand when the systems people do not move as quickly as they expect. "Our databases are huge and hierarchical and are tough to navigate through," Splice says. "We try to serve both sides but demands on us have grown as the technology has matured. The question is, Who provides the infrastructure?"

The answer to that question varies from campus to campus. At Stanford, the decision to reunite administrative and academic computing in 1986 has proven to be a critical and financial success, according to Street. "We have a $45 million operation," he says. "With something that big, you can take advantage of the economies of scale."

The university needed an IBM 3090 Model 300 with vector processing to handle its peak computing loads during the day. Street sought to cushion that investment by actively selling time on the free cycles during the evening. He offers these near-supercomputer capabilities for a low rate ($40 per hour) to faculty and students who need the large-scale computing power. The university provides funds for users without external support and charges the research grants of those with support.

Unfortunately, many schools have had less positive experiences.

At the University of Southern California (USC), the academic director of budget planning looked at the numbers involved in supporting three separate groups — academic, administrative and scientific and engineering — and decided in 1984 that all computing should be placed in one center. The vice-president of finance, who had contentedly built a financial system around Prime Computer, Inc. equipment, declined to participate. But the IBM group, representing the main computing center, and the Digital Equipment Corp. group, from science and engineering, set out to merge.

According to Dianne Bozler, director of USC Software Systems, it was a mismatch of cultures from the beginning. The director of the IBM installation was put in charge, and although the IBM side was made up of environments such as SAS and SPSS, the systems staff was handpicked from the DEC environment. The DEC people quickly learned the IBM protocols, but that was not enough. "We had a bunch of guys who had come from this exciting DEC environment who were told 'No more hacking. We have paychecks to run,' " Bozler says.

Dartmouth's Poage

For a year, the university stayed the course, bringing in consultants to help facilitate what was turning into a painful marriage. Deadlines were missed, reports were not delivered and service declined across the board. "It simply didn't work," Bozler says. "There was a total inability to understand that you just can't bring a system down in the middle of the day. If they needed to run something, they just brought the system down with no warning at all, and we couldn't stop that behavior."

Decisions as to the coupling or uncoupling of academic and administrative computing continue to be hammered out in large institutions. But that is hardly the only pressing issue.

Organizing strategically to serve the varied constituencies will determine success in a competitive marketplace.

"The problems are not all that different from major corporations, but higher education tends to look within itself rather than to the corporate world for solutions," says R. Schuyler Lesher, a consultant at Nolan, Norton & Co. in Lexington, Mass., who has spent 12 years viewing academia's use of technology.

Lesher reports that often in higher education, strategic planning neglects information technology issues; worse, the plans center around how schools are currently organized rather than how they might be in the future.

Some of the major planning challenges facing information systems on campuses are:

• **Networks.** Networks have become a priority for information systems professionals in higher education. Information access to the larger academic community is becoming a measure of competitive advantage at a school. Researchers and students are now demanding access, but the road to connectivity is filled with potholes.

Laying a network across traditionally hierarchical organizations, not to mention diverse academic and administrative computing environments, is no easy task. Infrastructures must be introduced, and that takes careful strategic planning. "Putting a network on an old hierarchical structure takes some real visionary planning," Lesher explains. "They have to look to new models."

Adding to the confusion is the proliferation of national and international networks that serve academia, such as BITnet and NSFnet.

Richard West, assistant vice-president of information systems and administrative services at The University of California, can attest to just how tricky networking can be. West faces a laundry list of networking issues. He oversees the computing environments for the entire University of California system, which encompasses nine campuses. He recognizes that each campus must have autonomy, but a strategic direction is critical if all of the campuses are to benefit from information technology.

This is no easy task since there are 15 major computing centers on the campuses and 14 have standardized IBM MVS environments for administrative computing. On the academic side, computing evolved on a peer-to-peer basis, and thus Transmission Control Protocol/Internet Protocol (TCP/IP) became a de facto standard. TCP/IP-based networks are fine for certain needs, Richard West says, but there is no central network management, and therefore, no one knows if the network is working. The University of California, Los Angeles is currently working with IBM to support the interoperability of TCP/IP and IBM's Systems Network Architecture.

• **Keeping abreast of new technology.** Without deep pockets to fund infusions of new equipment, many schools struggle with outdated systems. Hooking new technology, such as workstations, into these patchwork quilts of homegrown code and cut-and-paste networks is no simple task. And just when computing center managers thought they had a handle on PCs, Steve Jobs unveiled his Next, Inc. machine and targeted it squarely at the university market (see story page 47).

"The campus grows obsolete at a frightening rate," Dartmouth's Poage says. "This year's seniors will graduate with 128K-byte Macintoshes, which are now just boat anchors. How do you keep the faculty and staff up to date with what the freshmen have?"

Old-line DP types who have been shifted into strategic MIS positions must be ready to oversee and lead that new wave or risk getting swamped by it. Are they up to handling it? "No," says California State University's Tom West. "The Peter Principle is definitely at work. Out of 19 campuses in our system, we've seen an information systems leadership change on 12 of them in the last five years."

• **Security.** Computer viruses tend to strike first on campus, particularly at high-tech-oriented schools such as MIT or the University of California, Berkeley. Widespread use of Unix makes a rampaging virus significantly more dangerous. Information systems managers on campus are less concerned about hackers, however than the potential threat to data integrity inherent in opening databases to the end users sitting at PCs and workstations around campus. "There's no reason not to give students access to grades and registration material, but we're holding up on that because we're afraid to let students into the databases," University of Michigan's Splice says.

• **Library automation.** Universities and colleges are scrambling to get their libraries on-line and automated, but millions of volumes, reports and other printed material make this a costly and time-consuming task.

At Dartmouth, the library was the first entity to get involved with computers, according to Margaret Otto, Dartmouth's head librarian. And, she claims, Dartmouth was among the first to get its card catalog on-line and to develop a computer-based acquisition and control system.

Still, even with an early lead, keeping up with demand is a challenge. Faculty and students now expect 24-hour access

A tradition of technology

At Dartmouth College, a small liberal arts school in the snowy hinterlands of New Hampshire, technology is part of tradition. This harmonious situation exists largely due to the influence of John Kemeny and Tom Kurtz, who created the Basic language there in 1965 and initiated a campus-wide time-sharing network.

Since then, the college's centralized computing operation, organized around the Kiewit Computation Center, has spearheaded a major commitment to computing.

Today, there are more than 6,000 Apple Macintoshes on campus (with just 5,000 students), and 85% of all students will purchase a computer during their undergraduate careers.

And though it is relatively small in size, Dartmouth has big plans. The college and its library have initiated an integrated information retrieval system called Dartmouth College Information System (DCIS), while the Thayer School of Engineering there has embarked on Project Northstar, an ambitious multiphase development plan.

DCIS will combine a user-friendly windowed interface on the Mac, the high-speed Kiewit campus network and a variety of databases that will give campus users access to new and better educational tools. Eventually, DCIS will provide the ability to combine numerical, textual and compound documents, as well as video and audio.

The goal of Project Northstar, which started in 1986, is the development of computerized curriculum materials and the construction of a communications network to deliver programs to faculty and studeots.

According to Dan Lynch, associate dean of Thayer and principal researcher on the project, Northstar will eventually incorporate 400 high-powered Unix-based workstations.

Even Dartmouth's exceptionally receptive computing atmosphere is not immune to conflicts, however. Because Dartmouth's scientific/engineering program is relatively small, Northstar fights an inherent prejudice against the value of Unix. With Macintoshes everywhere on campus, it has become a political battle to get support for the minority operating system.

GLENN RIFKIN

to libraries from their workstations, and as disk storage technology improves, full-text availability will become a must. "The library building may become obsolete down the line," Otto says.

• **Impact on education.** Finally, perhaps the most crucial planning question concerns what impact computing will have on the actual learning process. Although most undergraduates are computer literate, and the PC is common enough to be considered part of the furniture, its impact on learning remains unclear.

John Kemeny, former Dartmouth president and creator of the Basic language, says he believes that the computer is an expository tool but that it does not necessarily change what is learned. Lawrence Levine, director of user services at Dartmouth, claims the computer is just one small factor in a student's life and it is difficult to separate out just what it does for the learning process. "Students have access to more information, but do they write better papers? No, they write longer papers, which are easier to read."

"We'd like to see computing affect the entire course curriculum," says Stanford's Street. It hasn't happened yet, he says, "but we think it will."

Ironically, the most financially secure institutions are not necessarily at the forefront of technology.

"I've seen as much reluctance to make changes at schools with money as at schools without money," Lesher says. "I've seen some real innovation at small schools which have taken advantage of commercial software packages out there. Smaller schools often don't have the burden of a huge infrastructure that has to be changed or gotten rid of."

Keeping up with the Joneses

In fact, size of the institution does not alleviate the concern that some of the most technologically impoverished departments can be found side by side with the most heavily endowed.

"There is definitely a battle between the haves and have-nots," University of California's Richard West reports. "Faculty members in electrical engineering and computer science don't have enough space to put in all the machines vendors give them, while the art historian has to beg for a PC. There is definitely tension."

In the long run, Richard West says that these arguments will become moot. "We've got to start viewing computing as part of the university infrastructure just like the library, offices, desks and telephones," he states. "The cost of recruiting the top students and faculty is going up. Prospective faculty now ask, 'Do I get a workstation? Do I get supercomputing time? Am I on the national network? Is there staff to write software for my course?' We haven't made the commitment yet, but it's becoming a priority." •

Rehearsing on a small screen

BY SHARON BAKER

Students of the performing arts will soon have a new medium on which to fine-tune their productions.

The Creation Station, a software program designed to run on Next, Inc.'s Next machine, will help these artists-in-training generate, edit and produce a play, dance or video on computer.

David Gregory

The software was designed by David Gregory, director of the Center for Performing Arts and Technology at the University of Michigan in Ann Arbor, along with colleagues Hal Brokaw and Henry Flurry. The program gives students more hands-on exposure to fine arts.

Gregory envisions universities setting up Creation Stations in individual rooms, much like practice rooms in a music department, in which both students and faculty can conduct individual work on their own time.

"The bottom line is that creative artists are going to have a really potent tool for either creating things or for simulating things," Gregory says.

The Creation Station permits the manipulation and integration of animation and music. A choreography student, for example, can create a floor pattern by moving a three-dimensional representation of a dancer across the screen with a mouse, terminating the action by clicking the stop button. He can then create two more patterns on two separate tracks. A simple touch of the play button will allow the student to simultaneously review the three steps he just established.

Once the steps are choreographed to the student's liking, music can then be added to another track, and the multimedia performance can be played back to see how the dancers relate to the music before rehearsals take place.

The system, expected to become available in the second quarter of 1989, was demonstrated at the recent Educom conference held in Washington, D.C.

Baker is a *Computerworld* assistant editor, features.

Animating the classics

BY BONNIE MACKEIL

A group of professors from Boston University, Harvard University, Bowdoin College and Pomona College are working to breathe life into the study of classical Greek civilization. The means for this effort is Perseus, a software program now being tested in classes at Harvard and Bowdoin. The program is scheduled for completion in December.

The program, which has been in development since July 1987, is set up as a hypermedia database using Apple's Hypercard. According to Greg Crane, director of the Perseus project, the system gives students a more vivid view of this ancient and complex period. "We're trying to tie together as many different kinds of information about a rather messy subject [the reconstruction of the world] and tackle it as fluidly as possible," Crane says.

Using Perseus, he explains, students are able to call up a map of Greece, point to a section of the country and view a map of that area. By clicking on a specific city within that area, they can get more detailed information, such as the presence of artifacts and ruins. If they need more information, they can call up articles about the subject.

The program also enhances the study of Greek literature. When reading a play, for example, a student can re-create the staging, positioning the actors on the screen and trying out entrance and exit possibilities. This level of visualization changes the way students think about the text, Crane says, and gives it an immediacy that it never had before.

According to Crane, students learn more in less time using Perseus, and they get more excited about their work because the payoff for their time investment is bigger.

"They are able to learn things that even professional scholars weren't able to learn before," he adds.

MacKeil is a *Computerworld* researcher.

Perseus director Crane *hopes the program will enliven Greek studies*

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No rest in administration

BY PATRICIA CINELLI

More and more demands are being placed on administrative computing services at colleges and universities. According to Carol Barone, vice-president of information systems and computing at Syracuse University in Syracuse, N.Y., working in administrative systems now means constantly learning new ways of doing things in jobs that will not remain static.

Universities have always been complex organizations, but they have never been forced to work quite as hard at management as they now must do in order to contend with mounting competition for quality students and faculty, financial pressures and escalating requirements for accountability.

For all of those reasons, notes Joe Wyatt, chancellor of Vanderbilt University in Nashville, colleges and universities are increasingly dependent "on the prompt availability of critical information in a form usable by decision makers at various levels in the organization."

In many cases, prompt availability of information is synonymous with direct access. Barone says that demand is rising on her campus for products that allow personal computer users to manipulate data on a mainframe. "Our clients want information faster and want to do more with it," she says. "They want to analyze it themselves so they can make better decisions."

What that means, however, is a much heavier responsibility for the information systems organization in terms of both support and guardianship.

At Syracuse, the support aspect has been handled, in part, through the reassignment of staff from applications groups to administrative support groups that provide services to staff and faculty.

Safeguarding systems integrity in the more open environment is a more difficult problem. "Fifteen years ago, a system assumed a certain ethical standard. Now, security has to be built into applications," Barone says. "In the past, we had supervisors authorize access to records by hand. Now, [user demand dictates that] we have an automated security system that checks individuals against authorization records. With end-user computing, it becomes important to provide access based on the individual's need to know."

And it is not only faculty and staff that are stepping up the pressure on administrative systems. Government reporting requirements are placing greater demands on administrative computing, particularly in the area of financial aid.

At the University of Maryland in College Park, for example, Butch Reinke, director of the administrative computer center, says the amount of data the university's financial aid officers are asked to collect on each applicant for financial aid has almost quadrupled this year.

Syracuse's Baron

Another finance-related area is adding to the systems work load. Fund-raising efforts at many colleges and universities have taken on a new urgency of late, and that means more dependence on information systems.

According to Kenneth Pollack, vice-president of information resource management at Wright State University in Dayton, Ohio, college administrators are constantly asking, " 'Who is our audience? How [can we] put together a consistent consolidated approach to raising capital, keeping track of donors and alumni, distributing correspondence and following up?' To effectively perform these tasks, you really need the support of flexible computer programs," he says.

Washington, D.C.-based Gallaudet University, a small liberal arts institution with about 2,000 students and 2,000 faculty and staff, recently began using PCs and modems to contact its hearing-impaired alumni and potential donors on telecommunications devices for the deaf (TDDs). These messages previously had to be manually typed on TDDs for each call. Kevin Casey, director of computer services, says easing the contact process decreased phone time and enabled development personnel to increase the number of donor contacts made in a campaign.

Just making the contact, however, is only part of the job. At Wright State, the kinds of questions that potential donors raise when they are contacted helped to suggest yet another new activity for the systems department.

At Wright, computers are now helping the university conduct institutional research that it hopes will provide answers not only for curious potential donors but also for others with questions, including government officials, administrators, parents and faculty.

Recruitment is another area of systems demand that keeps evolving, according to Pollack. In fact, the phrase now used at Wright State is "enrollment management," which sums up the more sophisticated approach being pursued in prospect identification. The prevailing philosophy is that keeping students is at least as important as attracting them. ●

Cinelli is a free-lance writer based in Washington, D.C.

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Satisfying both technology- and solution-oriented users

BY STEWART H. ROBINOVITZ

It is not uncommon for designers of campus networks to feel pulled in two different directions. This is because most colleges and universities house two distinct and different sets of users with sharply divergent network requirements and support expectations.

One set, those interested in technology for its own sake, demands state-of-the-art tools. They know what they want and prefer to find their own mix.

The hardware platforms that these technology-oriented users utilize generally include Sun Microsystems, Inc. workstations, Apollo Computer, Inc. equipment, Digital Equipment Corp. Microvaxes, IBM Personal Computer RTs and Apple Computer, Inc. Macintoshes. Unix is their operating system of choice except for the Macintosh, which still requires Apple's proprietary operating environment.

Networking is done via the Transmission Control Protocol/Internet Protocol suite.

The only intervention this group usually wants from the central support organization is assistance in campus-wide quantity discounts or site licenses and provision of campus-wide network backbones interconnected to the external world.

At the other end of the spectrum are users who view technology as a means to an end. They want systems that are easy to use, along with full support services. These solution-oriented users are pragmatic in their approach, although not necessarily unsophisticated. The often-referenced personal computer power users fit into this group just as well as low-level users. These users emphasize packaging and expect universal answers to all their needs within a strict budget.

This group's platform choices tend to be IBM Personal Computer ATs and Personal System/2s or clones and Macintoshes, and these users prefer networks that do not alter the operating "feel" to which they have become accustomed.

It is difficult, if not impossible, to find uniform integrated systems that will satisfy both groups. But the two populations often overlap in terms of geography and work, so the network designer must create structures that suit separate interests but are also compatible enough to permit communication between both sets.

At the University of Michigan, we currently have Banyan Systems, Inc.'s Virtual Networking Software, or Vines, as the PC local-area network of choice and Apple's Appletalk as the preferred Macintosh LAN for our solution-oriented users. We offer full support and training, detailed network configuration and assistance in network installation.

We also offer a limited amount of support and some informal training for 3Com Corp.'s 3+. We are currently reviewing Novell, Inc.'s status, with the hopes of offering full Netware support.

We recently installed twisted-pair wire within our campus for data and voice and tried to minimize the need for more extensive specialized wire. As part of our efforts to explore this media, we have been working with Northern Telecom, Inc.'s Lanstar high-speed packet transport. We have found the Lanstar to be a good transport for users of Vines and Netware as well as Macintosh IIs. We now support it for those users when there is a great enough concentration to make it cost-effective. Farallon Computing, Inc.'s Phonenet is supported for all Macintoshes. Ethernet and token-rings are occasionally used. The solution-oriented users generally accept whichever of these strategies is most cost-effective.

The technology-oriented users generally prefer Ethernet, so we also have extensive Ethernet. The Lanstar tends to be rejected by these users, partially because it is proprietary but mostly because it will not support Ethernet-equipped workstations, and many advanced-function workstations come with integrated Ethernet adapters.

> IT IS difficult, if not impossible, to find uniform integrated systems that satisfy both groups.

The technology-based users do not want as extensive an effort made for them as do the solution-based users. The university has been trying to set up a structure to support these users. There are major groups supporting advanced-function workstations and high-speed networking and projects with major vendors, including IBM and MCI Communications Corp.

These projects have been undertaken by the information technology division to place the university on the technological frontier. The Center for Information Technology has also been established to facilitate these efforts.

The Institutional File Server is a joint project with IBM to develop a facility in which large IBM mainframes can be used as secure, central and distributed file servers in a multivendor academic environment.

The project will also build in file access work that is being developed at Carnegie-Mellon University. It will provide services in a Unix environment using Sun's NFS and for Macintosh using Apple's AFP protocols, so that Unix and Macintosh users will access the network in a consistent manner.

The campus fiber backbone uses fiber optics and cable provided by Northern Telecom. Its goal is to create a high-speed network using the emerging Fiber Distributed Data Interface (FDDI) protocol. We are working with several vendors with the objective of providing the first large operational multivendor FDDI network.

One of our biggest challenges is taking the results of these projects, which appeal greatly to the technology users, and ensuring that they are of use to the solution users. ●

Robinovitz is a telecommunications specialist at the University of Michigan's Office of Administrative Systems and Center for Information Technology Integration.

Next in line on campus?

Steve Jobs says his new machine will "revolutionize" higher education. Such words tend to provoke skepticism among academics who have heard many promises. But campus MIS professionals are not dismissing Jobs or his new product by any means.

Jobs, after all, delivered the Macintosh just before he left Apple Computer, Inc.

The Next machine also has credentials that are hard to ignore. Beyond its sleek magnesium package and stylish 17-in. black-and-white high-resolution monitor, the machine, which has been priced at $6,500, offers the high-powered Motorola, Inc. 68030 microprocessor. It incorporates stereo compact disk sound as well as a breakthrough magneto-optical disk drive that stores 256M bytes of material.

The Next operating system is a version of Unix called Mach, which Dan'l Lewin, Next's vice-president of marketing, says provides a critical advantage — the possibility of interapplication communications. Nextstep, its software development environment, is an object-oriented mechanism that Lewin says could bring object-oriented programming out of the laboratory and into the classroom.

Still, not everyone is convinced that Next will take campuses by storm. Industry leaders such as Bill Gates of Microsoft Corp. and Bill Joy of Sun Microsystems, Inc. have been widely quoted as saying that they are not overly impressed by the machine. And at the recent Cause meeting in Nashville, John Sculley, president of Apple, the firm likely to be most affected by Next, was more than a bit skeptical.

"I have a tremendous respect for Steve's passion for education," Sculley said of his former boss. "But there wasn't anything surprising in the Next announcement. There isn't anything there that Apple won't be able to offer."

Nothing has raised more doubts and questions for Next than the machine's announced cost. The $6,500 price tag is either considered too high or too low, depending on your point of view. Robert Street, vice-president for information systems at Stanford University, is in the first camp. "It won't be bought by large numbers of students; $2,500 is about as high as students will go," he says.

Sculley, on the other hand, questions whether Next can deliver all that it claims for $6,500. "Let's just wait and see what people end up paying," he says.

Lewin bristles at the price questions. He claims that Next will find a lucrative niche between personal computers and high-powered workstations and that $6,500 is not too high for the package the user will get.

Time may be Next's greatest ally. Price aside, Street likes what Next is doing: "I'd be startled if in five years it didn't have a major impact on campus."

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A directory of 1988 feature articles

Computerworld presented a variety of regular and special features throughout 1988, covering a wide range of managerial and technical topics.

In Depth offered 66 stories, written predominantly by industry experts and treating such subjects as benchmarking, executive support systems, Unix vs. Systems Application Architecture, Integrated Services Digital Network (ISDN) and quantum computing. Several In Depth stories were written by CW news staff members, including three profiles of leading-edge MIS organizations: Du Pont Co., J. C. Penney Co. and American Express Co. In November, our microcomputer reporting team scoped out MIS' personal computing options for 1989.

Product Spotlight analyzed 21 product categories in the buyer's guide section. The areas covered ranged from database management systems to IBM's Systems Network Architecture market to PC graphics.

In 1988, Executive Report examined 19 issues of particular relevance to MIS management, targeting seven vertical markets — health care, airlines, manufacturing, education, banking, government and retail — as well as large networks and PC networks, Transmission Control Protocol/Internet Protocol, ISDN, the Bell operating companies and systems integration.

Computerworld Focus presented 11 issues last year, specifically covering different aspects of communications/connectivity, software, departmental computing, security and personal computing.

The 13 special features offered by CW in '88 included the first annual Premier 100, three *Computerworld Extras*, the annual salary and job satisfaction surveys and hardware roundups. Reports on PC buying, the corporate Macintosh and computer careers for graduates rounded out the specials lineup.

In 1988, 16 section features were presented, primarily covering management topics.

This index will help readers locate articles that were published in *Computerworld* in 1988. To order a back issue, call or write the Back Issues Department, P.O. Box 9171, Framingham, Mass. 01701-9171, 508-879-0700, ext. 371. The fee is $2 per issue plus $1 postage and handling, prepaid by check to *Computerworld*. Please note that issues published on Jan. 4, Jan. 25, April 25 and July 18 are no longer available.

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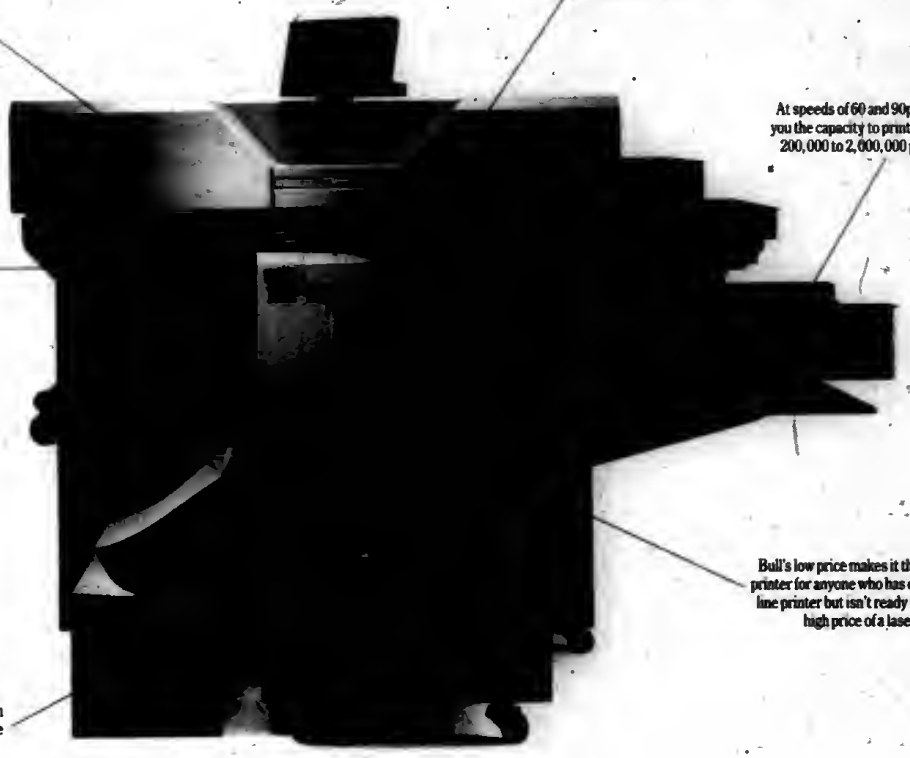

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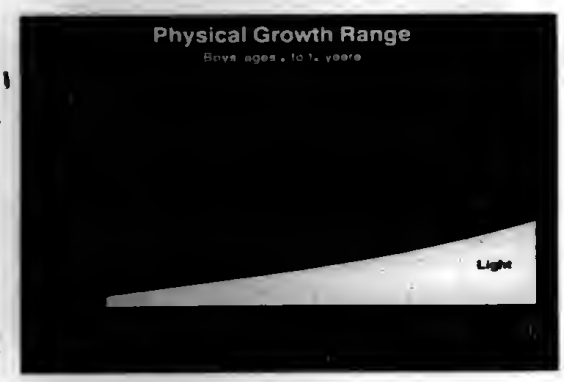

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TAKING CHARGE

Michael Pepelea

Clearing the air

The benefits of data normalization in creating effective data structures are easily recognized by most database administrators. But many MIS executives have misconceptions about data normalization, and these misconceptions prevent them from supporting it within their organizations.

Considering the background of many MIS executives, it is easy to understand why misconceptions develop. Many of those MIS executives achieved success because of their past technical superiority. But these skills were developed when life in the MIS world was much different than it is today. Flat files were the technology of the day. Only a few database management systems were available. Data sharing and distributed data structures were not major issues. Mainframe applications were the rule, and portability of data and connectivity were theoretical issues. Many MIS executives still view data issues from the perspective of that environment.

If a database administration hopes to gain MIS executive support for data modeling, it must address some of these misconceptions. MIS executives will then be more inclined to support a data normalization approach.

One of the first misconceptions relates to systems design. It holds that normalization is a process engaged in by technical people with little regard for

Continued on page 60

Doing more with less

Fleet's DP consolidation task falls to Zucchini

BY DAVID A. LUDLUM
CW STAFF

"I'm not everybody's favorite person around here," confided Michael R. Zucchini, chief information officer at Fleet/Norstar Financial Group, Inc., as he stepped from his red Jaguar sedan toward Fleet/Norstar's data center in Providence, R.I., earlier this year.

It is not that Zucchini is unlikable; he was referring to fallout from his consolidation of data processing and bank operations after Fleet Financial Group, Inc. merged with Norstar Bancorp, Inc. a year ago.

Since then, Zucchini has supervised 225 system conversions and the closing of seven data centers, including the one in Providence.

The actions resulted in the elimination of 150 jobs, about half of them layoffs. "It's been a year where every skill I've been able to develop over the years has been needed," Zucchini said in a follow-up conversation last month.

Zucchini, 42, grew up in New York's Bronx borough, earned undergraduate and graduate business degrees at Pace University, served in the Army and became a programmer. More recently, he has bred race horses as a hobby and served on President Reagan's Private Sector Survey on Cost Control, known as the Grace Commission.

Fleet Financial Group hired Zucchini as executive vice-president and CIO in August 1987, four months before completing the anticipated merger with the Albany, N.Y.-based Norstar.

Lineage

Zucchini came to Fleet from Stamford, Conn., reinsurance company General Re Corp., where he was president and chief executive officer of the DP subsidiary. In 1987, he won an award from Carnegie-Mellon University for General Re's Confer system. The system provides underwriters, sales staff and customers with data on accounts and reinsurance policies previously stowed in a warehouse. In 1986, Zucchini patented an outlet for portable computer terminals.

With assets of $26 billion, Fleet/Norstar ranks 23rd among the nation's bank holding companies. Brokerage firm Smith Barney, Harris Upham & Co. ranked it as the top performer among regional U.S. bank holding companies for the third quarter of 1988. With 19,000 employees, seven banking companies in four states and a total of 1,000 offices in 40 states and London, it is a leader among the growing breed of "superregional" banks.

Zucchini is CEO of Fleet/Norstar Services Corp., a 3,300-person subsidiary handling bank operations and DP.

He is also CEO of Fleet/Norstar Business Data, Inc. in Newington, Conn., a DP service bureau formed in October, and is responsible for DP at Fleet/Norstar subsidiaries that provide

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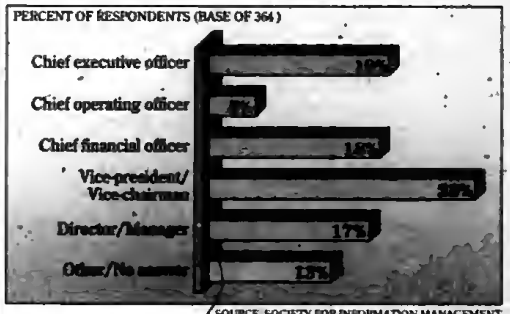
Data View

Who's the boss?

Many IS executives report to board-level corporate officers



SOURCE: SOCIETY FOR INFORMATION MANAGEMENT
CW CHART

PROFILE

Michael Zucchini

MARTHA EVERSON

Position: *Chief information officer, Fleet/Norstar Financial Group, Inc.*
Mission: *To consolidate bank data processing and operations in the wake of mergers while maintaining day-to-day activities and expanding nonbanking data processing opportunities.*

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A different channel to train MIS

BY ALAN J. RYAN
CW STAFF

MIS, the harbinger of technology for corporate America, is finding itself relying more and more heavily on high-tech solutions to train and educate its devotees.

Interactive video, teleconferencing and pay-per-view seminars are practical, usually save money and time and can actually increase productivity, according to companies using them.

One of the most visible techniques available for MIS learning is The Computer Channel, Inc., a 4-month-old pay-per-view series of seminars on topics such as networking, databases and OS/2.

The program is broadcast via satellite and is geared toward the middle levels of MIS organizations. Each program typically lasts four hours and eliminates what in some cases would be two days spent traveling. A decided advantage of the live television broadcast is its question-and-answer sessions, during which the audience can participate in the conference and share opinions or questions with the speakers over the telephone, subscribers to the show said.

At the Marriott Corp. in Bethesda, Md., many methods of video training are used, including videotapes and The Computer Channel. Both are cost-effective, said Larry Bryan, technology advancement coordinator for the hotel chain. "We find that video training is much more cost-effective" and more consistent than training people who will in turn have to travel to other sites to train others, he said.

Furthermore, there can be even more cost savings through satellite conferencing because there are no production costs like those associated with creating in-house videos, Bryan said. "We're counting more on the compelling information to be the focus of the broadcast, not the production that you have to have on videotape to maintain audience appeal and interest," he said.

Some companies are using a combination of many technologies, including television. The Memphis, Tenn., headquarters of Federal Express Corp. is also the headquarters of FXTV, an in-house television network that is used at 700 Federal Express sites throughout North America.

Dave Flanagin, senior manager of video systems development at Federal Express, said the company's FXTV system was such a hit when it was implemented a year ago that it outstripped its projected schedule and is being used to broadcast programs on a daily basis. While FXTV has the ability to be used for MIS training, Flanagin said the MIS department is more likely to use the available interactive video training.

Flanagin said that FXTV has essentially replaced both a printed publication and videotapes within the corporation: "We

Continued on page 58

Different channel

CONTINUED FROM PAGE 55

used to distribute something like 500 videos a year. Now we do almost all of that consolidated over FXTV."

Flanagin said FXTV, which has been in place for a year, is expected to justify its cost within five years of its inception.

Using a similar approach is J. C. Penney Co., at which the latest in video technology is not limited to training and MIS. There, the buyers for the retail stores simply watch the company's TV network to select product lines.

Another alternative is interactive videoconferencing capabilities, such as those in place at Harris Corp. in Melbourne, Fla. The company uses this capability to hold nationwide product releases from its home base to hotels across the country and to hold meetings with sales representatives or other Harris officials throughout the country or the world.

The Harris system continues to grow as a viable method to train people and trim travel costs, said Donald Wilkof, manager of corporate marketing support at the Customer Briefing Center.

One time, when Harris Chief Executive Officer John T. Hartley was scheduled to speak at a meeting of Harris' European sales representatives, he ran into a scheduling problem, Wilkof said. So he walked the short distance from his office to the teleconferencing room, where he spoke with the sales representatives via satellite. "Within an hour and a half, he was back in his office rather than going to London" and spending two days traveling, Wilkof said. "It's a very cost-effective."

As the old saying goes, though, you can't please all of the people all of the time. Some people really enjoy traveling, Wilkof said, but there may be a way to resolve that problem. "We were even thinking of offering 1,000 frequent-flyer miles" for people who agreed to conduct teleconferences rather than travel, he said.

CALENDAR

JAN. 15-21

National Retail Merchants Association Annual Convention and Business & Equipment Exposition. New York, Jan. 15-18 — Contact: NRMA, 100 W. 31st St., New York, N.Y. 10001.

PTC '89, Conference of the Pacific Telecommunications Council. Honolulu, Jan. 15-18 — Contact: Pacific Telecommunications Council, Suite 308, 1113 University Ave., Honolulu, Hawaii 96826.

SPIE/SPSE Symposium on Electronic Imaging: Advanced Devices and Systems. Los Angeles, Jan. 15-20 — Contact: Society of Photo-Optical Instrumentation Engineers, P.O. Box 10, Bellingham, Wash. 98227.

Computer Graphics New York. New York, Jan. 17-19 — Contact: Exhibition Marketing & Management Co., Suite 1110, 8300 Greensboro Drive, McLean, Va. 22102.

Supercomputing Solutions '89: New Technologies for Super Performance Computing. New York, Jan. 17-19 — Contact: Supercomputing Solutions '89, Suite 1110, 8300 Greensboro Drive, McLean, Va. 22102.

Executive Conference for Corporate Data Processing Managers. New York, Jan. 18 — Contact: International Data Corp., Box 955, 5 Speen St., Framingham, Mass. 01701.

Winter Conference of the National Association of Telecommunications Dealers. Palm Springs, Calif., Jan. 18-21 — Contact: NATD, 1255 23rd St. N.W., Washington, D.C. 20037.

MANAGEMENT BRIEFS

Managers: 'What, me worry?'

Turnover rates for top-level MIS and communications managers may be on the rise, according to some surveys, but now there is research that says individual managers feel safe in their personal positions.

In a study released recently, the New York-based market research firm **Decisions Center, Inc.** asked 305 top telecommunications and MIS executives whether they are likely to lose their jobs during the next 1½ years. Almost all of the respondents — 94% — said that they felt safe. The managers also expressed little concern about a recession, with two-thirds saying a recession is unlikely in the next two years.

The IBM users group **Guide International Corp.** is planning its second information systems symposium with the goal of teaching senior executives about how information systems technology fits into the global economy. The preliminary list of speakers includes former U.S. Ambassador to the United Nations Jeane Kirkpatrick, author John Naisbitt, economist Lester Thurow and Jim P. Manzi, chief executive officer of Lotus Development Corp. The symposium is scheduled for Oct. 2-4 in San Francisco.

The **Association for Systems Management** has announced the keynote and special speakers for its annual information systems conference to take place May 7-10 in Dallas.

David J. Eskra, chairman of Pansophic Systems, Inc., will deliver the keynote, while a special address will be given by Robert F. Berland, vice-president in charge of IBM's Application Systems Division.

The newly formed **International DB2 Users Group** (IDUG), established at a Chicago meeting recently, has scheduled its first international conference for July 9-12 in Chicago. Information is available from IDUG, Suite 600, 111 E. Wacker Drive, Chicago, Ill. 60601.

Why spend money on computers when you can make money on computers?

UN

More with less

CONTINUED FROM PAGE 55

processing for life insurers and issuers of student loans and mortgages.

In contrast to the consolidation in banking, Zucchini is decentralizing some of Fleet/Norstar's nonbanking DP. The company has completed a data center for Fleet Real Estate Funding Corp., a Columbia, S.C., mortgage firm that had been supported by the corporate data center. The new center provides more flexibility and greater economy, since redundancy features make use of the bank center more expensive.

But Zucchini has devoted most of his attention to banking. He has eliminated eight mainframes in closing the seven bank data centers and suspended use of three DP service bureaus.

The consolidation has cut annual DP expenses for the banks by more than $10 million, or 13%, and the banking DP staff by 25%, Zucchini says. Banking DP was consolidated in a former Norstar data center in Albany with an IBM 3090 Model 500E.

Fleet/Norstar is standardizing on the best of Fleet and Norstar systems and in some cases new ones, generally using in-house staff. Systems and programming staffs remain decentralized and have been reduced only through attrition.

Fleet/Norstar offered different positions to some DP employees whose jobs were eliminated and tried to be generous toward laid-off workers "both in emotional and financial support," Zucchini says.

Zucchini helped minimize layoffs by taking advantage of attrition — shifting vulnerable employees into vacated positions to be maintained and filling jobs slated for elimination with temporary consultants.

A sense of balance

Zucchini's handling of layoffs showed sensitivity but also a "strong sense of reality" required to address company needs, says Dave Sheppard, former Fleet DP chief and current co-chief operating officer of Fleet/Norstar Services. In addition, Zucchini learned the banking business very quickly, Sheppard says. "He has a tremendous amount of energy and a tremendous appetite for information."

J. Terrence Murray, the Fleet/Norstar president who hired Zucchini, says the company was attracted by Zucchini's organizational abilities more than his technical knowledge. He says Zucchini maintained day-to-day operations while moving forward with the restructuring. "Mike was successful because he was very focused on his goal and constantly moving toward it," Murray says.

Bob Drum, formerly Norstar DP chief and now co-chief operating officer with Sheppard, says Zucchini has "a way of getting to the nub of things," and a knack for generating agreement on objectives.

"I think Mike is probably one of the best communicators I've ever encountered in 27 years in this business — in lis-

MARTHA STEVENSON

Zucchini *gets away from MIS shop*

tening as well as talking," Drum says. "I consider myself to be pretty good manager, and I've learned a lot of things from Mike."

Zucchini says the merger has given him more sensitivity to the need "to work through people and not around them."

Given the potential setbacks employees face in a restructuring, a successful leader needs to get them to see the value to the organization of doing things right, he says.

Zucchini still faces 35 to 50 system conversions, but he is looking forward to spending more time with his wife and daughter on the horse farm they are developing in Chepachet, R.I., which is 30 minutes from work, and his townhouse in Providence.

He should not worry about having too much idle time. Soon, Fleet/Norstar expects to complete the acquisition of the $1.9 billion Indian Head Banks, Inc. in Nashua, N.H. "We're beginning to look at it to see what path we should take," Zucchini says.

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Pepelea

CONTINUED FROM PAGE 55

business issues. Therefore, data normalization does not address business needs and offers no benefit to the system design process.

Nothing could be further from the truth. Database administration must point out that the first thing the data normalization process does is define the way in which users will access the data. These are called "user views" or local views and are obtained by reviewing user-defined screens and reports and investigating data flow diagrams, which should be defined with user assistance. Data normalization does not exclude business needs but is based on user requirements.

Another common design misconception of data normalization is that it is unnecessary because structured analysis and design techniques define data relationships.

Structured analysis and design are essential to good system design. They must be done to define processing requirements. However, structured analysis focuses on processes, not data. Structured analysis will provide data relationships and passage of data from process to process. That macro view does not define the interrelationships of data element to data element, which is the micro view. It is this view that is needed by database administration to construct databases to support the new system. This view of data can only be achieved through a rigorous data normalization effort.

IF A DATABASE administration hopes to gain MIS executive support for data modeling, it must address misconceptions. MIS executives will then be more inclined to support a data normalization approach.

Another misconception is the physical database implication of normalized data. Key misunderstandings are that data structures produced from normalized data models contain too many segments or sets, have large access paths, require huge I/O operations and require complex key relationships. Thus, the databases generated by the data normalization process will perform poorly and be difficult to work with.

While it is sometimes true that normalized data structures may contain more segments than the traditional methods, this can be an enhancement rather than an inhibition to performance. Because the user views define data access requirements, data needed by a portion of the applications centers in well-defined segments. This means that the application does not have to access data that is scattered all over the database. Thus, performance is better in data-normalized structures because I/O is better controlled and defined.

With normalized data structures, data and multiple access paths are defined only once. Data redundancy is reduced in comparison with traditionally designed data structures, eliminating the need for special maintenance routines to keep data synchronized. Furthermore, less updating takes place for singularly defined data than data defined in multiple ways. Thus, system performance is enhanced.

Easier development

Last, because normalized data structures are neatly organized and data is organized by access requirements, program development is easier than it is with traditionally developed databases. Programmers need to access fewer data segments because program functions address logically grouped data. Also, because data relationships and key requirements are defined up front, programmers are not faced with "surprise" data needs that may require reprogramming and reworking of the database.

If these misconceptions of data normalization can be addressed, the only issue remaining is technology. Some MIS executives still feel that data relationship problems can be corrected with physical techniques in the DBMS.

Many MIS executives believe that rigorous data normalization is not necessary because the physical aspects of a DBMS will allow the database administrator to fix data relation problems. This belief may be partially true in the traditional hierarchical, networked or inverted file structures. But in a relational environment, failure to properly define data relationships can cause serious problems.

Database development for a relational environment must be different. In the relational world, much of the access to data, how indexes are established and how access paths are optimized is done under the covers. The database administrator or application programmer does not have the same level of physical control as be did with past DBMSs. Rather, the basis for control in a relational environment is the relationship of one data element to another. The way data is related dictates access and performance. The way to achieve this relationship is through a rigorous data modeling exercise.

Pepelea is a manager in the IS consulting practice of Ernst & Whinney in Chicago.

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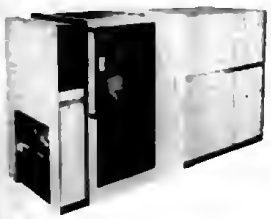

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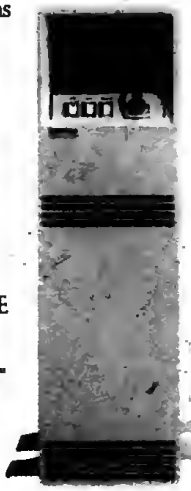

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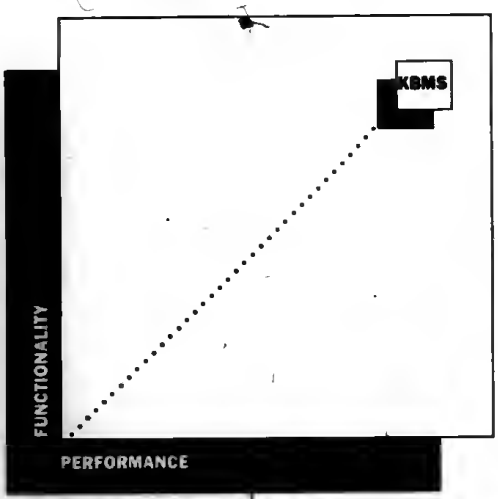

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INDUSTRY INSIGHT

Lee Gruenfeld

Bankruptcy rewrite gives users a break

At last there is some potential good news for users of licensed software. It appears that Congress has finally gotten around to acknowledging that there may be a difference between an application package and a novel.

In October, Senate bill S. 1626 amended the Bankruptcy Code in a way that may offer better protection to licensees or customers whose vendors become bankrupt.

The original problem, which extends well beyond the concerns of software users, is complex but can be reduced to its essentials with a bit of oversimplification.

It is common practice for software vendors to withhold source code from their customers. Generally, if the customer does not intend to modify the programs and instead relies on the vendor for upgrades, this is an acceptable arrangement as long as the vendor remains financially viable.

But what does the customer do if the vendor becomes unable to continue support of the product? The traditional mechanism

Continued on page 66

AT&T makes up its mind in '89

Giant begins new year with aggressive gambits, buyouts, partnerships

BY PATRICIA KEEFE
CW STAFF

NEW YORK — Determined to shed its aura of indecision and marketing ineptness, a seemingly revitalized AT&T has entered 1989 with a flurry of announced partnerships with, and planned purchases of, communications competitors.

AT&T last week announced that it had formed a joint venture with GTE Corp. that reportedly will result in the sale of GTE Communications Systems' central office transmission equipment to AT&T.

Two weeks ago, AT&T launched an aggressive bid to purchase Paradyne Corp., a once-successful data communications equipment manufacturer that came upon hard times after pleading guilty to charges that it conspired to defraud the U.S. government [CW, Dec. 26].

Two months ago, AT&T said it would purchase Harris Corp.'s Pactnet satellite ground station technology, which is used to provide satellite-based networks [CW, Nov. 28]. The acquisition included a line of very small-aperture terminal earth stations already marketed by AT&T.

AT&T-IBM gateway

Later this month, AT&T is expected to unveil an alliance with Cincom Systems, Inc. The agreement is intended to provide a gateway between AT&T's Unified Network Management Architecture and IBM's competing product, Netview.

Last week's GTE announcement revolves around AG Communications Systems Corp., a joint venture first announced in July that was designed to bring Integrated Services Digital Network and other advanced technology features to GTE's digital telephone switching systems.

A related agreement calls for AT&T to license certain 5ESS Switch and related technologies to AG.

Financial terms of the deal were not disclosed, but the partners did reveal that GTE will initially hold a 51% interest in the firm, with AT&T eventually assuming 100% ownership after 15 years.

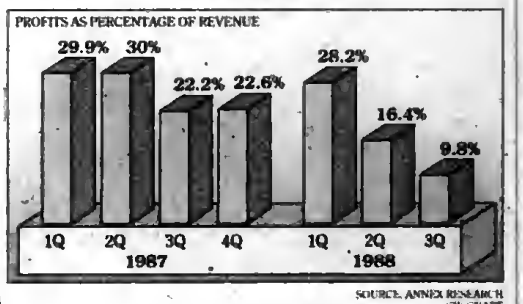
Headquartered in Phoenix, the new company is composed of the network-switching business of GTE Communication Systems. All GTE Communication Systems' assets and its 4,900 employees have been absorbed into AG, including the Phoenix-based headquarters, principal research and development complex and manufacturing plants in Illinois.

Jack M. Kirker, former president of GTE Communication Systems, heads up the jointly owned company as chief executive officer and reports to a board of directors representing GTE and AT&T.

Data View

IBM leasing: Shrinking margins

Aggressive pricing and intense competition squeezed IBM Credit Corp.'s profit margins in 1988



SOURCE: ANNEX RESEARCH, CW CHART

Gandalf pulls end-user strategy out of its hat

BY JEAN S. BOZMAN
CW STAFF

WHEELING, Ill. — Gandalf Technologies, Inc. wants to get out from behind the corporate mainframe.

For 18 years, the Canadian firm made a fine living by selling modems, multiplexers and other black boxes. Most of them typically resided in the far corner of the computer room, out of the way and largely unnoticed. They were usually reliable, making Gandalf a low-profile vendor in most large data processing shops.

But last year, Gandalf made a break with its solidly successful past. It decided to market a new kind of product that would link personal computer clusters and local-area networks directly to the outside world, bypassing DP's glass house altogether. Gandalf calls the new product series, known as Starmaster, a hybrid network system.

"We're trying to avoid the mind-set that my box is faster than your box," said Howard J. Gunn, vice-president of corporate planning at Gandalf's U.S. marketing center in this Chicago suburb. "We're trying to give the end users the techniques they need to run their business."

Gandalf's bold product move comes at a time when its own business needs a boost. The company reported flat revenue of $29.4 million ($35 million Canadian) for its first quarter ended Oct. 29 and a $1.13 million ($1.35 million Canadian) loss in the same period.

Although revenue surged up to $137.3 million ($163.5

Continued on page 65

Female executive bucks trend at Japan's Ricoh

BY J. A. SAVAGE
CW STAFF

SANTA CLARA, Calif. — Almost as rare in Japan as a woman with corporate power is a woman with a graduate degree in computer science. Hideko S. Kunii has both, and she is leading Ricoh Corp.'s effort to establish a software research center here.

Commuting from Tokyo, where she created Ricoh's database management software laboratory, Kunii spends one week per month here. Such voluntary separation from a husband is nearly unheard of in Japan.

"My husband can take care of himself, unlike typical Japanese men," she says.

Kunii holds out her hands and wiggles her fingers when describing just how few women have reached her rank in the Japanese business world. She says statistics from public corporations there show that only one out of 1,000 managers is a woman, "and that includes department stores."

Some Japanese social structures work against bringing women into the workplace. Most glaring, according to Kunii, is the discrepancy between men and women when they are first hired.

"There are two structures for women but not for men," she says. When women are hired, they are asked whether they are on a career path or a noncareer path. She says if they choose a career, they are told they may be separated from their families by being forced to move at the company's request.

Ricoh's Kunii

While Kunii is hardly traditional, she is swayed by the company's bottom line. "Often, we train women who then quit to have a family. I can see two sides."

Kunii, who studied for her Ph.D. at the University of Texas in Austin, is attempting to recruit U.S. engineers for Ricoh's development laboratory. Coming from a country where new hires only get one shot at a job and are placed there for the rest of their lives, she says she may have an easier time building staff here.

"In Japan, industry has a handicap," Kunii says. "They have to educate after hiring." There are 100 times more undergraduate students in computer engineering here than in Japan and 20 times more graduate students. Often, she says, computer companies in Japan recruit liberal arts students for highly technical jobs. Another major difference is that in Japan, recruitment of employees from other Japanese companies is nearly taboo.

With her partial U.S. schooling, Kunii may take a more global view than some of her Japanese colleagues. "We're such a uniform country, but communication of information is so worldwide," she says.

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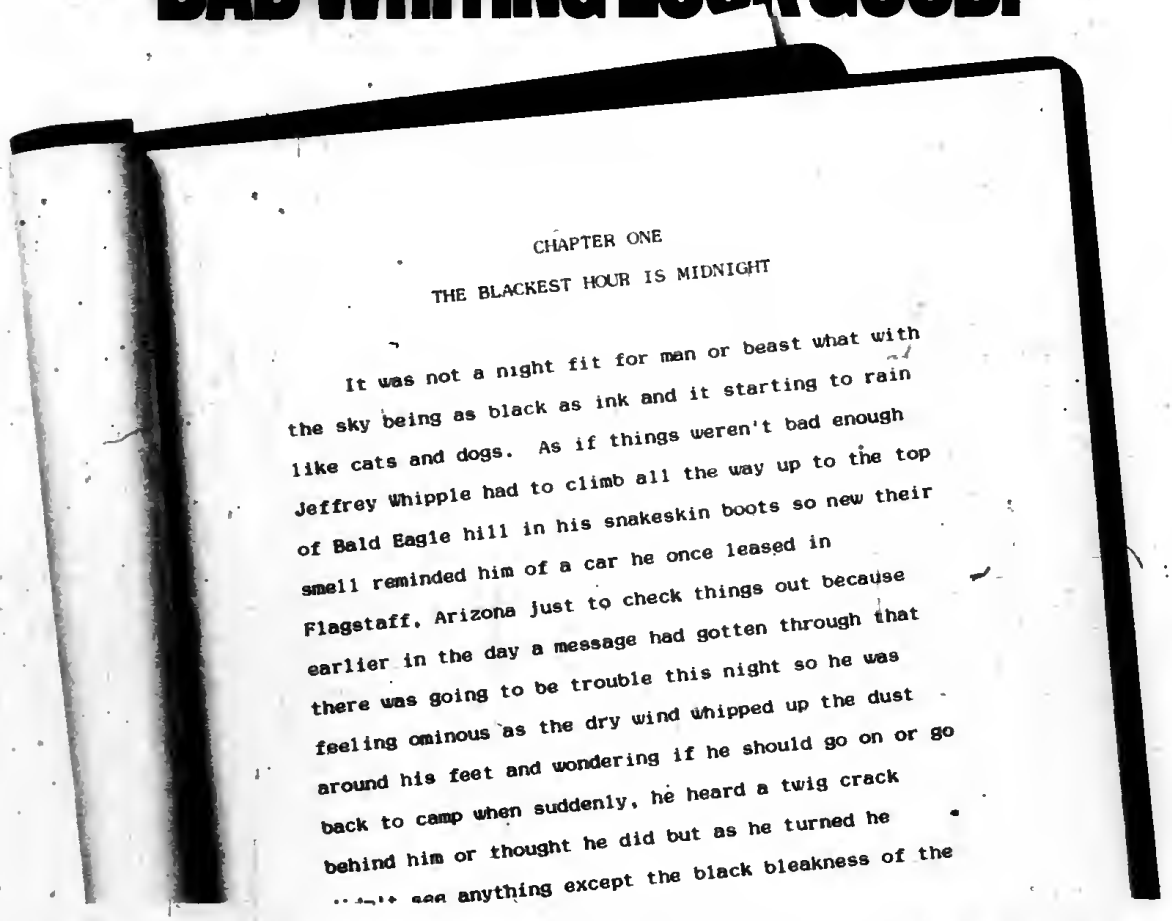
CHAPTER ONE
THE BLACKEST HOUR IS MIDNIGHT
It was not a night fit for man or beast what with
the sky being as black as ink and it starting to rain
like cats and dogs. As if things weren't bad enough
Jeffrey Whipple had to climb all the way up to the top
of Bald Eagle hill in his snakeskin boots so new their
smell reminded him of a car he once leased in
Flagstaff, Arizona just to check things out because
earlier in the day a message had gotten through that
there was going to be trouble this night so he was
feeling ominous as the dry wind whipped up the dust
around his feet and wondering if he should go on or go
back to camp when suddenly, he heard a twig crack
behind him or thought he did but as he turned he
anything except the black bleakness of the

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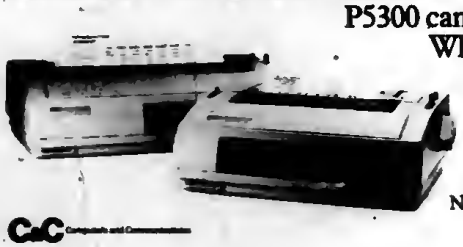

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IN BRIEF

One more for the new year

Apple Computer, Inc. started the new year by corralling additional clout for developers with the acquisition of Coral Software Corp., a Cambridge, Mass.-based purveyor of programming languages and artificial intelligence tools for Macintosh personal computers. Coral currently makes and markets two LISP product lines — Pear LISP, an entry-level development environment, and the more sophisticated Allegro Common LISP — as well as Object Logo, an object-oriented version of a programming language widely used in education.

Apple's acquisition includes not only the Coral technology but also five key software engineers around whom the new parent plans to develop a Cambridge-based research lab for its Advanced Technology Group.

Is eight enough?

Ask venture capitalist Thomas J. Perkins. Already the chairman of seven publicly held companies including Tandem Computers, Inc. and Genentech, Inc., the Kleiner Perkins Caufield & Byers partner heads into the new year as chairman — the company's first — of Alliant Computer Systems Corp., which hopes to harness his experience to renew its assault on the embattled minisupercomputer sector.

Softech takes one giant step

Softech, Inc.'s recent purchase of Wakefield, Mass.-based Compass, Inc. from Applied Data Research, Inc. marked the Waltham, Mass.-based company's entry into the high-end compiler and professional services marketplace for supercomputers as well as its first giant step beyond the federal government services arena into the commercial marketplace. The deal also effectively placed Softech in the rarified group of contrarians who have acquired organizations from super-acquisitor and ADR parent firm Computer Associates International, Inc.

Oracle keeps on spiraling

Oracle Corp. last week reported another quarter bound to disappoint those who speculated that the Belmont, Calif.-based database vendor could spiral no higher. Revenues for Oracle's second fiscal 1989 quarter ended Nov. 30, 1988 came in at $123.7 million — a 105% increase over last year's second-quarter sales. Net income rose 125% to $17.2 million.

Gandalf

CONTINUED FROM PAGE 63

million Canadian) in the fiscal year ended July 31, profits were just $7.9 million ($9.4 million Canadian). Gandalf made an unfriendly bid for the UK's CASE Group plc last January, which the target firm rejected.

Gandalf management has taken several steps to hold costs down. These include the November layoff of 90 U.S. workers and the shutdown of the assembly plant here.

In its new product strategy, Gandalf has had to reach beyond its usual arena of communications hardware to provide application software, electronic mail and other soft features. Inside the Starmaster cabinet, customers can assemble a combination file server and network node in a fashion similar to the creation of a stereo system from major components.

Testing, testing

Gandalf claims several large customers for Starmaster, including General Motors Corp.'s Electronic Data Systems Division in Detroit, but many early users are still evaluating the technology, Gunn said. One reason is that Starmaster attempts to support a wide variety of computer architectures while eliminating the need for a remote IBM 3274 cluster controller.

"We don't want to argue the esoteric issues of different architectures," Gunn said. "We're trying to bring performance improvements to all these environments.

"We're focusing on end users because we want to help them in planning their overall network design," Gunn added. But, he said, "We're not keeping the MIS people out of the loop."

The key to Gandalf's success in marketing its distributed file servers will be the degree to which they support open standards, according to Frank Drubeck, president of Communications Network Architects, Inc. in Washington, D.C. Until now, many of Gandalf's most successful products have been weighted toward the IBM environment.

"They'll have to recognize the nuances of the marketplace," Drubeck said, "and right now, the drift in the marketplace is toward standards."

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Hitachi beefs up U.S. presence

BY J. A. SAVAGE
CW STAFF

NORMAN, Okla. — If the oft-rumored sale of National Advanced Systems (NAS) to Hitachi Ltd. comes true, Hitachi will have a ready supply of U.S.-made storage peripherals available for the U.S. market.

Hitachi said recently it is more than doubling the size of its storage subsystems manufacturing plant here by the end of 1989. Hitachi is taking advantage of the dollar's weak position against the Japanese yen to manufacture more economically in the U.S.

The $10 million expansion of the year-old Hitachi Computer Products (America), Ind. facility is ramping up to produce 7380 JX and K direct-access storage device (DASD) subsystems for NAS mainframes.

Previously, NAS obtained those newest DASD models from Hitachi's main plant in Japan, according to a spokesman.

The lack of DASDs available for shipment was blamed in part for NAS' poor revenue in the quarter ending August 1988.

Prior to the December ramp-up of JXs and Ks, the plant supplied NAS with DASD Model Ds and Es.

Gruenfeld

CONTINUED FROM PAGE 63

is to set up a third-party escrow arrangement for the source code. Contract provisions specify those conditions under which the vendor will turn over the source code. Examples include failure to issue timely upgrades or inability to correct bugs.

Basically, the escrow agreement, like the entire license agreement, is considered to be an "executory contract." But under bankruptcy law, the trustee of the bankrupt company can simply reject an executory contract — and that is the end of the escrow agreement and the customer's rights to the source, no matter how diligently the customer may have complied with all the terms of the contract. No amount of contract language, no matter how clearly it expresses the intent of the vendor to turn over source code, can protect the customer.

The legal journals are filled with clever strategies created by frustrated attorneys to try to protect their clients from this occurrence. As stated above, the worst part is that there have been no actual test cases to use as models. Furthermore, the very right to even use the software itself is rarely dealt with.

The camel's back

The final straw prompting Congress to fix the problem was the case of *Lubrizol Enterprises* v. *Richmond Metal Finishers* in the 4th U.S. Circuit Court of Appeals.

Richmond had licensed a proprietary metal coating process to Lubrizol on a nonexclusive basis. After Richmond went bankrupt, it decided that it could increase the price of its coating process if it took away Lubrizol's rights to it.

Lubrizol had done nothing to violate its contract but, shockingly, the 4th Circuit allowed Richmond to reject the license agreement for no other reason than to increase the value of the technology to the bankrupt company's estate.

The implications for software escrows were profound. Here was a case where the customer (Lubrizol) already had the technology in hand, paid for it and now was prevented from using it.

The cavalry charges

Enter Sens. Dennis DeConcini (D-Ariz.) and Howell Heflin (D-Ala.) and the Intellectual Property Bankruptcy Protection Act of 1988. The act is actually an amendment to the Bankruptcy Code and is designed to address those situations where there is "an executory contract under which the debtor is a licensor of a right to intellectual property." Specifically, it is expected that software licenses will be considered executory for purposes of interpreting the code.

Essentially, the new rules give the customer two options in dealing with rejected licenses. The customer can either consider the contract to be terminated or retain his rights under the contract. In both cases, the licensee may make a claim for damages caused by the rejection.

The trustee of the bankrupt company will be prevented from interfering with the customer's right to obtain the source code (for example, from a third-party escrow holder) if that right was written into the software contract. Even better, the customer does not have to wait for the trustee to reject the contract but can request that the materials be turned over immediately.

It is good news indeed. But, as usual, things are not as simple as they sound. The new rules will require very carefully worded contracts to ensure that the desired effect is manifested. None of this has any impact on other problems of escrow arrangements such as the need to ensure that the source code actually matches the object code — a remarkably widespread and underestimated issue. The new rules open a great window of opportunity but are no cause for relaxation.

Gruenfeld, a management consulting partner in the Los Angeles office of Touche Ross & Co., specializes in strategic information systems planning.

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Charting MIS course by degrees

Master's in MIS programs offer professionals an alternative to MBA

BY JANET MASON
SPECIAL TO CW

The graduate degree of choice for most MIS professionals is an MBA with a concentration in information systems. An alternative is the master of computer science, but this degree more often lends itself to technical positions in the vendor community.

The new kid on the block is the master's degree in MIS, which is offered by only a dozen or so universities, far fewer than the ever-present MBA. Leaders of programs offering the master's in MIS say it was designed for people anticipating a relatively technical career track. In contrast, companies might seek MBA holders for positions in end-user departments in which they would know the work and could apply MIS expertise.

However, Mike Lawson, associate professor of economics and chairman of the MIS department at Boston University, notes that graduates of the university's 6-year-old graduate MIS program have been promoted to some management roles.

"Our graduates have already moved up to direct the MIS departments in small and medium-size organizations, and they have also advanced to high positions in consulting firms," Lawson says.

MIS managers, academics and recruiters agree that the question of which degree to pursue is not based on which is better but rather on fitting the proper academic background to one's career path.

Individuals with an MBA tend to land more lucrative posts than those with a master's in MIS. But Lawson says the choice of degrees should hinge on whether an individual wants the broad-based management outlook of the MBA or the more technical one of the master's in MIS.

MBAs wanted

Georgia Miller, assistant dean of the School of Business at Indiana University in Indianapolis, says that companies seeking to hire MIS employees with a broad business perspective for applications work or entry-level management positions favor MBAs. "Companies will hire MBAs when they are looking for future leaders of the company, because they tend to have more of a generalist background," Miller says.

Students joining the Indiana University MBA program on average have three to five years of experience in a general business function. "We feel that it is very important for students to have business experience outside of their field," Miller says. "MIS is not an area unto itself. The students have to relate it to the rest of the business."

Warren Harkness, MIS director at Bose Corp., a manufacturer of audio products in Framingham, Mass., says his company hires MBAs with five to 10 years in a consulting environment for the in-house business systems consulting group.

These MBAs try to identify solutions to business problems, then review the technical feasibility of the solutions and hand projects over to a technical person, Harkness says.

> "COMPANIES WILL hire MBAs when they are looking for future leaders of the company, because they tend to have more of a generalist background."
>
> GEORGIA MILLER
> INDIANA UNIVERSITY

Jim Young, managing director of recruitment firm Source EDP in Philadelphia, says his clients seeking employees with MBAs are generally management and computer consulting divisions of Big Eight accounting firms. "The ideal academic background [for these firms] is an undergraduate degree in computer science and then an MBA," he says.

Amy Peal, an analyst/programmer at Pennwalt Corp. in Philadelphia, began studying for her MBA in 1984. She says accounting and finance classes provide her with an understanding of end users' problems when designing systems in those areas.

"As an MBA candidate, I feel I have broader-based business knowledge that makes me more useful to my employer already," Peal says.

Few grad MIS programs

Boston University's Lawson estimates that there are currently fewer than a dozen graduate-level MIS programs in the country. "The career track in MIS is still developing," Lawson says. "Most universities are still trying to reconfigure their business programs to include MIS courses."

Boston University takes the novel approach of requiring candidates for master's in MIS to attend the program full-time for 11 months. The university also requires candidates to hold an undergraduate or graduate degree in business.

"It's important for our students to have a grounding in business," Lawson says. "Then when they enter the program, they take a core of business courses that focus on how MIS functions in those areas, along with specialized technical courses in MIS and management classes."

The master's in MIS program at the University of Arizona in Tucson is more technically oriented than Boston University's and is designed so that students can opt for a part-time or full-time schedule.

This degree is geared to positions in data administration, database design and networking, says Jay F. Nunamaker, director of the Arizona program. The greatest demand among organizations recruiting graduates is for telecommunications, Nunamaker adds.

In the Arizona program, students take a core of five business courses along with technical MIS courses. They can specialize in several areas, including analysis and design of databases and communications, and networking, according to Nunamaker.

Lawson says he expects programs offering the master's in MIS to eventually spread to more campuses. "There's a large demand in MIS departments for people trained in the technical areas of the industry," he says.

Mason is a Philadelphia-based freelance journalist.

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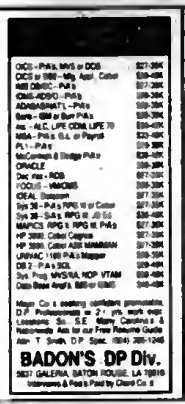

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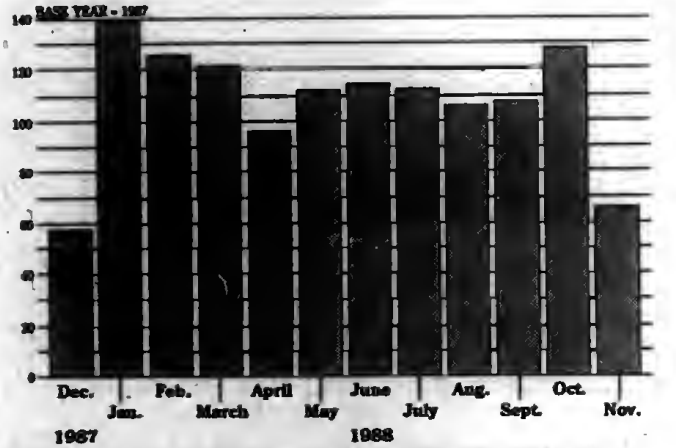
Computer recruitment advertising index*



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Vaccines are no miracle cure

Treatments for viruses could be hazardous to your computer's health

BY RICHARD PASTORE
CW STAFF

In the aftermath of November's Internet virus attack, vaccines claiming to detect and cure various types of computer infections have proliferated. An antiviral package vendor reports of a fellow who travels in a mobile home, going on-site to hunt down viruses and administer inoculations in the style of Hollywood's *Ghostbusters*.

As helpful as the vaccines may appear, some industry watchdogs and organizations are condemning some of the products as ineffective and potentially harmful.

Del Jones, managing director of the National LAN Laboratory in Reston, Va., has issued a set of guidelines on virus prevention and control endorsed by about 70 manufacturers [CW, Dec. 12]. "The guidelines specifically exclude vaccines because of the false sense of security they provide," Jones explains. "Once you throw in a vaccine, there's a tendency not to look at management issues, which is the proper way to control the problem."

Harold Highland, founder and editor of *Computers & Security*, the professional journal of the International Federation for Information Processing, refers to the newest vaccines as "kindergarten variety." Highland recently commissioned a study of 20 commercially available antivirus products. The results, scheduled to be published early this year, make clear to Highland that the vaccine marketplace "has a very long way to go."

Temperamental vaccines

The study's investigators encountered temperamental products that crashed systems and inexplicably worked only with particular text editors. Highland says he has seen vaccines that "are effective against only one or two types of viruses — though they don't tell you that."

Highland says some products are apparently marketed without being tested on the viruses they claim to protect against, since captured viruses must be carefully controlled and are not readily distributed for commercial testing. Highland declined to provide more specific findings of the research.

Martin King, manager of audit services at Computer Associates International, Inc., agrees with the characterization of some vaccine vendors as carpetbaggers but contrasts their work with the development effort he says went into CA's CA-Examine.

Beginning in 1984, King, who has been lecturing on security issues for the past eight years, led a team that developed the antiviral package for IBM MVS systems, which is now in place at about 400 companies worldwide.

The software, developed in cooperation with U.S. government agencies and Big Eight accounting firms, took two years to gel, contains 150,000 lines of assembler code and wields more than 100 on-line analysis displays, King says. "It's serious software," he maintains.

One vendor that takes pains to acknowledge limitations of its vaccine is HJC Software, Inc., which makes a package called Virex for the Apple Computer, Inc. Macintosh environment.

"Right on the packaging, in the documentation and even when the program comes up, we say, 'Your computer is free of *known* viruses,'" says Robert Capon, president of the Durham, N.C.-based firm.

"We have a whole section in our documentation in which we emphasize that the use of products like Virex is not an alternative to adopting prudent computing practices, such as obtaining software from reliable sources and backing up," Capon adds.

He maintains that Virex was in development for nine months and that the firm had planned a Nov. 16 introduction six months prior.

"I was as surprised as everybody when the Arpanet virus hit. The timing was purely a coincidence," Capon says, admitting that the outbreak did give his marketing effort a significant boost.

Bard White, MIS director at Spaulding Sports Worldwide in Chicopee, Mass., chooses to rely on a vaccine as one segment of his antiviral armor. A year ago, he installed Systemate, Inc.'s Systemate vaccine on 150 IBM Personal Computers and compatibles as part of a security build-up. "It's like using a wood stove in the winter," White says of the vaccine. It provides partial protection and some psychological comfort, he says, "but at least you're trying to be proactive."

King echoes this attitude on the vaccine. "Though there's no perfect silver bullet," he says, "I'd rather have five or six lead ones and do the best I can rather than do nothing at all."

Pastore is a *Computerworld* copy editor.

> "ONCE YOU throw in a vaccine, there's a tendency not to look at management issues, which is the proper way to control the problem."
>
> DEL JONES
> NATIONAL LAN LABORATORY

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The BoCoEx index on used computers

Closing prices report for the week ending Dec. 29, 1988

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AT Model 239	$1,925	$2,900	$1,800
AT Model 339	$2,200	$3,600	$1,800
PS/2 Model 30	$1,650	$1,700	$1,300
PS/2 Model 50	$2,350	$2,600	$1,900
Compaq Portable I	$600	$975	$600
Portable II	$1,700	$2,000	$1,650
Portable III	$2,800	$3,550	$2,500
Portable 286	$1,750	$2,400	$1,675
Plus	$1,100	$1,250	$900
Deskpro 286	$2,200	$3,150	$1,800
Deskpro 386	$3,600	$5,100	$3,800
Apple Macintosh 512	$600	$950	$550
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A manager's obligation to self

Training directors owe it to their firms to stay abreast of what's new

BY EDMOND DROUIN
SPECIAL TO CW

How is your training mission statement coming? Do you have a clear description of roles and responsibilities for each member of your data processing training staff?

These statements, describing the training organization's mission and its relationships with clients, have become a prominent issue among managers in the years since Tom Peters and Robert Waterman wrote *In Search of Excellence.*

But another type of mission statement is equally important — one about the training manager's obligation to care for his own job and career. Unless he tends to his own growth and development, he will not be able to do so for others. If the training manager does not stay current with emerging technologies, management techniques, training methods and business developments, how can be deliver effective training for others?

This sense of taking care of oneself is much broader than the discredited values which arose from the "me generation." I view my obligation to myself as the responsibility for improving my knowledge and skills so that I can be a more effective manager tomorrow. I also need to allot time and energy to learn the coming technologies if I am going to lead the introduction of them into the organization.

Need to know

I believe that managers who ignore their responsibilities for self-development are cheating their employers. Training managers are paid to know how to use the most effective technologies for their organization and to prepare others to do so. They cannot do that if they do not know what is going on.

Colleagues may accuse you of taking jaunts to sunny climes when you attend a seminar on IBM-Digital Equipment Corp. integration. But the obligation of a manager is to lead the way to tomorrow, not to maintain training in yesterday's tools.

Let's look at tomorrow's tools. They are likely to include Unix, artificial intelligence, fourth-generation languages (4GLs), IBM's DB2, computer-aided software engineering, open operating systems and network platforms. Some other candidates are static analyzers, code generators, restructuring tools, testing products, image processing and voice input.

Some of you will say that you have a few of these tools today, so how can they be tomorrow's products? But tomorrow's tools are those beyond where you are today. Unix is more than a decade old, but if you do not have it, it is tomorrow's tool for you.

> IF THE TRAINING manager does not stay current with emerging technologies, management techniques, training methods and business developments, how can he deliver effective training for others?

When I suggest that managers need to be aware of new technologies, I don't mean the front edge of 5GLs; I mean they must evaluate where their organization is today and its probable migration path to the future.

How does one plan for the introduction of new tools? Other companies probably have preceded you in using them, and their training managers can be a great source of information. Also, there are regional training groups in most areas; their value cannot be overstated, as managers consider the issues involved in migrating to new tools.

There are three other areas of personal development to which managers should feel an obligation. Just as they need to stay current with technology, they must do the following:

- Stay current with the latest in managerial skills.
- Understand new training design techniques.
- Keep in close touch with the organization's changing business; MIS and MIS training are service units for that business.

I can hear the sighs and the complaints that there is really nothing new in management, only new buzzwords. But as with technology, new is only the step beyond where you are standing today. If you manage with tight controls and high structure, participative techniques may be your new managerial technology.

Perhaps you like having structure and control — that is your style, and you are comfortable with it. That rationale for resisting change is no more valid than the reasoning of a manager who wants to have all systems written with Cobol and IMS because he likes them and they are his style.

As for training design, what of techniques beyond pedagogy? What of synergogic methods, which emphasize students training one another? How about experiential learning designs, in which a seemingly farfetched experience can help students master specific management principles or other concepts. How much has your organization done to follow and evaluate such design trends?

Finally, how well do you stay current with changes in your firm's business? Does your firm have a new strategy? Do you know it? Does your firm have new subsidiaries? If so, do you know their functions?

Now ask yourself whether your training manager's level of activity in such pursuits is enough to maintain the status of a leading change agent in the firm.

That job is the training manager's role: leading people to change their knowledge, skills, attitudes and abilities. A training manager who does not see that role for himself should find a career that better suits his vision. Training managers who do see this role as the one for them should not cheat their firm or themselves by failing to meet their obligation of self-improvement.

Drouin is director of DP Education & Training at Liberty Mutual Insurance Co. in Portsmouth, N.H.

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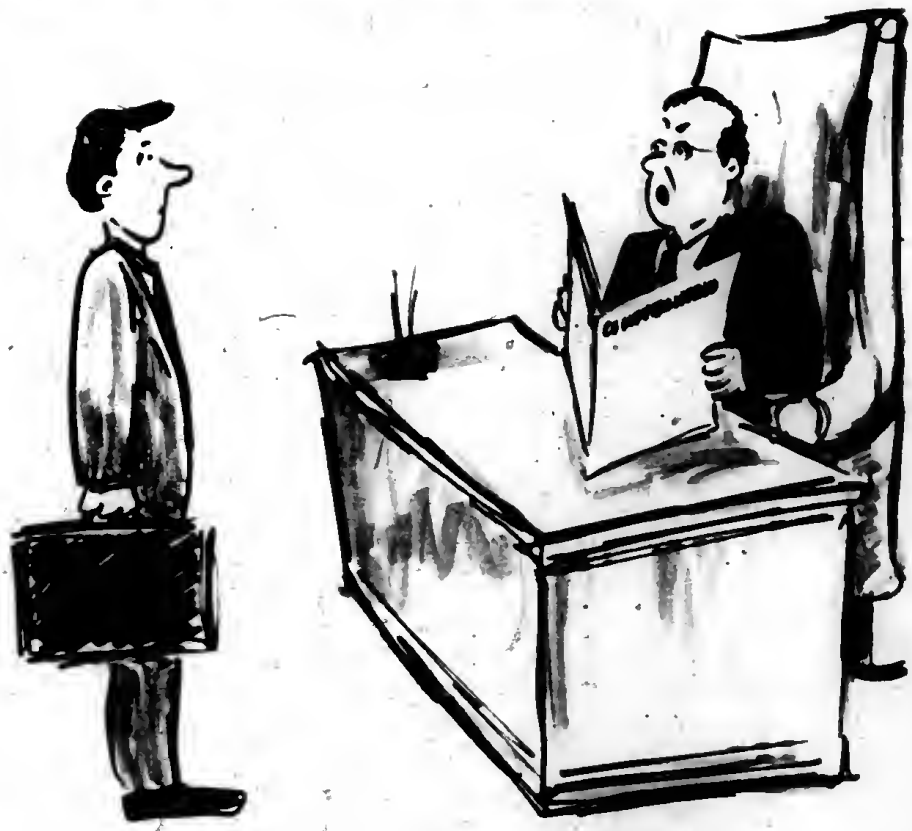

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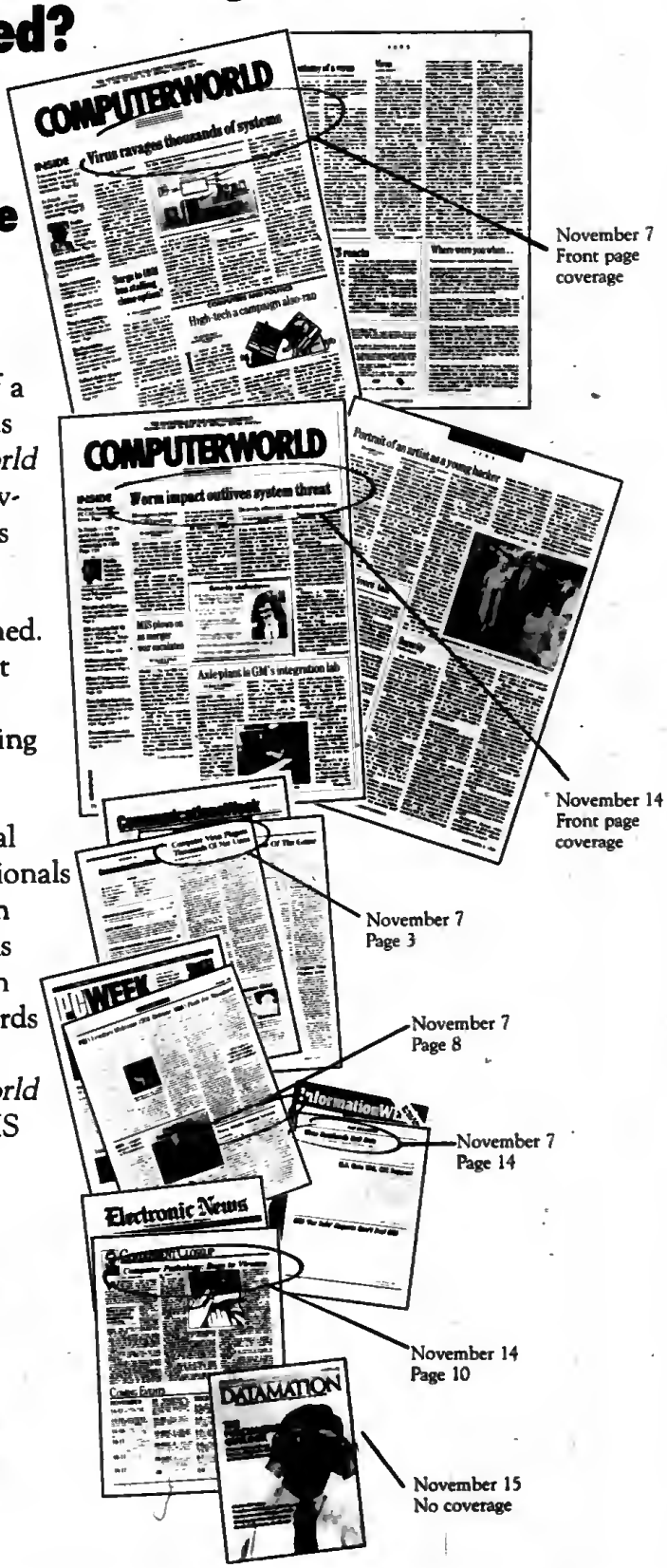

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Hungary: Dezso Fuzesi, Computerworld Informatika Co., Kft, Pf. 386, 1536 Budapest, Hungary. Phone: (011) 88 1 228 456. Telex: (861) 22 6307 (KSH H).

Italy: Umberto Costamagna, Computer Publishing Group S.R.L., Via Volo 7, 20127 Milano, Italy. Phone: (011) 39-2-28134432. Telex: (843) 335318. FAX: (011) 39 2 282 0886.

Japan: Dick Yamashita, Computerworld Japan, Akasaka Onotomachi Bldg., Minato-Ku, Tokyo 107. Phone: (011) 81 3 991 3882. Telex: (781) 252-4217. FAX: (011) 81 3 982 7239.

M. Nadamura, IDG Communications, Japan, c/o Maruzen International, Inc., Akasaka Center Building, 1-3-12 Moriokasaka, Minato-ku, Tokyo 107, Japan. Phone: (011) 81 3 403-8515. Telex: (781) 27941 (Attn for all CW Publishing publications except Computerworld Japan).

Mexico: Harry Morales, Computerworld Mexico S.A. de C.V., Oaxaca 31-2, Mexico City 7 D.F. Colonia Roma, 06700 Mexico. Phone: (905) 514 4218 or 6309. Telex: (383) 177 1300 (ACHAME).

The Netherlands: Wout Sorensis, CW Communications B.V. van Eeghenstraat 64, 1071 GK Amsterdam, The Netherlands. Phone: (011) 31 20 646426. Telex: (844) 18242 (CWCOM NL).

New Zealand: Martin Taylor, Computerworld Communications Ltd., 2nd Floor 15 Augustus Terrace, Parnell, Auckland, New Zealand. Phone: (011) 64-9-779 902. Fax. (011) 64 9 774 604.

Norway: Morten Hansen, CW Norge A/S, Hovmoveien 43, 0576, Oslo 5, Norway. Phone: (011) 472 647725. Telex: (856) 76476 (CW NOR H). FAX: (011) 47 269 0152.

People's Republic of China: Chen Minghun, China Computerworld, 74 Liu Gu Road, Box 750, Beijing (100038), People's Republic of China. Phone: (011) 47 814 0044. Telex: (716) 222214 (CCW CN).

Spain: Paco Zabala, CW Communications, S.A., Rafael Calvo, 18, 4B, 28010 Madrid, Spain. Phone: (011) 34 1 419 4014. Telex. (831) 45522 (CW E). FAX. (011) 34 419 01 04

Sweden: Bengt Mannfeldt, CW Communications AB, Sodra Hamningen 22, S-119 41 Stockholm, Sweden. Phone: (011) 46 8 87 91 80. Telex. (854) 14904 9 (NOR/CW) FAX: (011) 46 8 65 31 32.

Switzerland: Gebhard Diserwalder, CW Publikationen AG, Witikonerstrasse no. 15, Postfach 253, CH 8030 Zurich, Switzerland. Phone: (011) 41 1 55 10 77. Telex. (845) 818 710 (CWCI CH). FAX: (011) 41 1 55 1135.

Taiwan: Leona Wang, ACE Media Agency Co., Ltd., P.O. Box 26-578, Room 509a-1, Fu Hsin, S. Road Sec. 1, Taipei, Taiwan, R.O.C. Phone: (011) 886 2 721 4302. Telex: (785) 14142 (ACE GROUP) (Representative for all CWCI publications) FAX: (011) 886 2 721 0430.

London: Martin Durham, CW Communications Ltd., 69 Grays Inn Rd., London, WC) 8UT, United Kingdom. Phone: (011) 44 1 831 9252. Telex: (851) 262346 (THEPUB G). FAX: (011) 44 1 405 2347.

United Kingdom: Evan Rose, Beare Hobson & Associates, 34 Warwick Road, Kenilworth, Warwickshire, CV8 1HE, United Kingdom. Phone: (011) 44 226 512424. Telex: (851) 311651 (BEEHOB). (Representative for all CWCI publications) FAX: (011) 44 926 512948.

Venezuela: Kalman von Vajna Nagy, CW Communaciones, C.R.L. Tore Marcadito, Piso 13, Oficina H, Av. Libertador, Caracas, Venezuela. Phone: (011) 58 2 72 76 30. FAX: (011) 58 2 724870

West Germany: Eckhard Utpatel, CW Publikationen Verlagsgesellschaft mbH, Rheinstrasse 26/28, Postfach 40 0428, 8000 Munich 40, West Germany. Phone: (011) 89 89 390890. Telex: (841) 5213350 (CDWM D). FAX: (011) 49 89 3 60 89 68.

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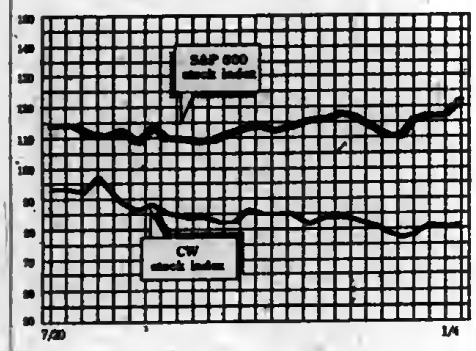
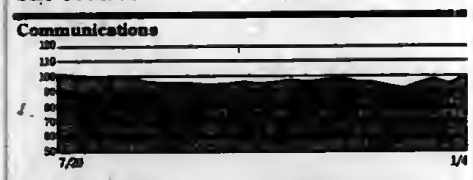
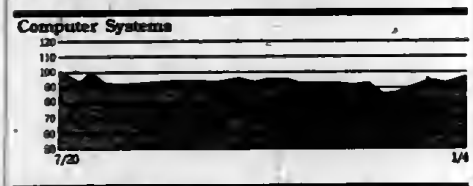
Jan. 16		Corporate Electronic Publishing
Jan. 23	Restructuring MIS — The Data Center	
Jan. 30	Special Report: Communications Innovators	
Feb. 6		Micro-to-Host Links
Feb. 13	Special Feature: Recruitment	Performance Management Tools
Feb. 20	Strategic Planning	

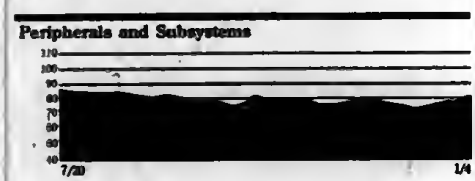
STOCK TRADING INDEX

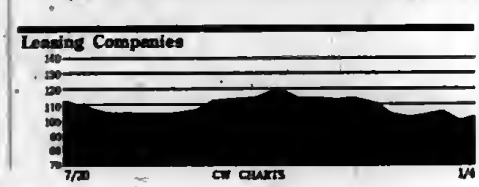


Indexes	Last Week	This Week
Communications	95.3	99.6
Computer Systems	93.2	96.4
Software & DP Services	102.8	106.4
Semiconductors	54.0	56.5
Peripherals & Subsystems	77.3	82.3
Leasing Companies	99.9	100.5
Composite Index	81.1	84.3
S&P 500 Index	116.2	117.9









CW CHARTS

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, JAN. 4, 1989

E x c h		52-WEEK RANGE (1)	PRICE CLOSE JAN. 4 1989	WEEK NET CHNGE	WEEK PCT CHNGE
	Communications and Network Services				
N	AMERICAN INFO TECHS CORP	98 82	98.125	-0.3	-0.3
Q	ANDREW CORP	20 13	18.9	-0.3	-1.3
Q	ARTEL COMM CORP	3 1	1.563	0.1	4.2
N	AT&T	30 34	28.75	-0.1	-0.4
Q	AVANT GARDE COMP INC	3 0	0.688	0.1	10.1
Q	AVANTEK INC	9 4	5.5	1.0	22.2
N	AYDIN CORP	17 12	15.5	0.8	4.2
N	BELL ATLANTIC CORP	75 65	70.375	-0.3	-0.4
N	BELLSOUTH CORP	44 38	39.375	-0.8	-1.8
Q	COMPRESSION LABS INC	9 3	3.625	0.1	3.6
Q	COMPUTER NETWORK TECH	2 1	1.375	0.8	14.4
N	CONTEL CORP	41 26	40.125	-0.3	-0.8
Q	DATA SWITCH CORP	10 5	8	0.9	11.5
Q	DIGITAL COMM ASSOC	26 17	18.75	1.0	5.6
Q	DYNATECH CORP	24 17	18.75	1.4	7.9
Q	FIBRONICS INTERNATIONAL INC	5 2	4	0.1	3.2
Q	GANDALF TECHNOLOGIES	6 6	5.875	0.8	14.9
Q	GENERAL DATACOMM INDS	5 3	4.5	0.0	0.0
N	GTE CORP	48 34	44.125	0.8	2.0
Q	HYPERTRON SYS CORP	14 9	10.625	0.4	3.7
N	ITT CORP	55 43	51.25	0.8	1.5
N	M A COM INC	11 9	9.875	0.8	6.0
Q	MCI COMMUNICATIONS CORP	25 10	25	-0.4	-1.5
Q	NETWORK EQUIPMENT TECH INC	25 14	17.75	1.5	10.9
Q	NETWORK SYS CORP	12 7	11	0.8	7.3
Q	NORTHERN TELECOM LTD	20 16	18.375	0.0	0.0
Q	NOVELL INC	33 16	32	2.5	8.5
N	NYNEX CORP	71 61	65.75	-0.1	-0.2
N	PACIFIC TELESIS GROUP	33 26	30.75	0.8	0.8
N	PARADYNE CORP	10 4	10	0.0	0.0
A	PENRIL CORP	5 3	4.375	0.8	6.1
N	PLESSEY PLC	41 25	41	1.5	4.5
N	SCIENTIFIC ATLANTA INC	18 10	12.875	0.1	1.0
N	SOUTHWESTERN BELL CORP	43 33	39 9	-0.9	-2.2
Q	3 COM CORP	25 16	24.5	3.9	18.8
N	U S WEST INC	60 49	57.625	0.1	0.8
	Computer Systems				
Q	ALLIANT COMPUTER SYS	9 3	4.125	-0.3	-5.7
Q	ALPHA MICROSYSTEMS	8 4	6.5	0.8	10.8
Q	ALTOS COMPUTER SYS	13 7	7.875	-0.3	-3.1
A	AMDAHL CORP	28 14	19.5	0.8	2.5
Q	APOLLO COMPUTER INC	17 7	8.875	0.3	2.9
Q	APPLE COMPUTER INC	48 26	42	1.8	4.3
N	BOLT BERANEK & NEWMAN	19 10	10.25	0.3	2.5
Q	BRITTON LEE INC	3 1	2.5	-0.1	-2.5
N	COMPAQ COMPUTER CORP	66 42	62.375	3.0	5.1
Q	COMPUTER AUTOMATION INC	14 3	9 1/2	0.4	5.9
A	COMPUTER CONSOLES INC	13 5	12.625	0.0	0.0
Q	CONCURRENT COMP CORP	7 4	4.5	0.1	2.9
N	CONTROL DATA CORP	31 16	20.625	0.8	1.9
Q	CONVEX COMPUTER CORP	11 8	10.25	0.0	0.0
N	DIGI INTL INC	89 53	61.5	2.8	4.2
Q	DAISY SYS CORP	12 9	9.875	0.1	1.9
N	DATA GEN CORP	26 17	19 1/2	1.3	7.0
N	DATAPOINT CORP	8 4	4.5	0.1	2.9
N	DELL COMPUTER CORP	15 9	10.375	0.8	7.8
N	DIGITAL EQUIP CORP	145 66	100.25	3..	3.2
N	FLOATING POINT SYS INC	5 2	3.625	0.8	31.8
N	HARRIS CORP	33 24	27.625	1.5	5.7
N	HEWLETT PACKARD CO	66 44	63.875	0.8	1.4
N	HONEYWELL INC	77 54	60.375	0.9	1.5
N	IBM	130 104	122.5	0.0	0.0
Q	INFORMATION INTL INC	16 10	14.75	0.4	2.8
Q	IPL SYS INC	5 1	4.75	0.0	0.0
N	MAI BASIC FOUR INC	21 9	9.5	0.4	-8.0
N	MATSUSHITA ELEC INDL LTD	230 166	205.625	0.8	0.3
Q	MEGADATA CORP	4 1	1.625	-0.1	-7.1
Q	MENTOR GRAPHICS CORP	37 19	30.78	3.4	12.3
N	NBI INC	7 2	2.5	0.3	11.1
N	NCR CORP	70 51	55.125	1.3	2.3
N	PRIME COMPUTER INC	19 12	18.375	1.0	5.6
Q	PYRAMID TECHNOLOGY	17 8	16.5	0.5	3.1
Q	SILICON GRAPHICS CORP	25 14	19.5	2.3	13.0
Q	STRATUS COMPUTER	32 20	28.25	1.3	4.8
Q	SUN MICROSYSTEM INC	20 13	17.25	0.8	4.5
Q	SYMBOLICS INC	2 1	1	0.1	9.6
Q	SEQUENT COMPUTER SYS INC	18 13	16.75	0.4	2.0
N	TANDEM COMPUTERS INC	32 12	17.5	1.4	8.5
N	TANDY CORP	49 32	40.875	0.0	0.0
N	ULTIMATE CORP	21 9	9 1/2	0.3	2.7
N	UNISYS CORP	39 25	29.125	1.3	4.5
A	WANG LABS INC	17 9	8.625	0.0	0.0
	Software & DP Services				
Q	ADVANCED COMP TECH	3 1	1.782	0.2	14.0
Q	AMERICAN MGMT SYS INC	19 12	17.375	2.1	13.9
Q	AMERICAN SOFTWARE INC	17 9	16.375	0.8	3.1
N	AMACOMP INC	12 8	7	-1.0	-12.5
Q	ANALYSTS INTL CORP	13 7	12.5	2.1	20.5
Q	ASHTON TATE	31 20	21.375	0.1	0.8
Q	ASK COMPUTER SYS INC	19 7	16.125	1.9	13.2
Q	AUTODESK INC	31 19	20.25	1.5	5.2
N	AUTO DATA PROCESSING	47 35	39.375	0.4	1.0
Q	BMC SOFTWARE INC	14 9	13.625	0.2	1.8
Q	BOOLE & BABBAGE INC	10 7	9.5	0.0	0.0
A	BUSINESSLAND INC	19 8	14.5	0.3	1.8
N	COMPUTER ASSOC INTL INC	33 24	33.375	1.9	6.0
Q	COMPUTER HORIZONS CORP	12 7	9.625	0.8	6.9
N	COMPUTER SCIENCES CORP	54 28	47.0	0.4	0.8
Q	CORPORATE SOFTWARE	19 8	10	0.0	0.0
N	COMPUTER TASK GROUP INC	17 10	13.5	0.0	0.0
Q	COSMOS INC	8 5	7.875	1.0	14.5
N	COGNAURE INC	25 13	21	0.3	1.2
N	CULLINET SOFTWARE INC	9 4	8.75	0.1	1.6
Q	DUQUESNE SYS INC	25 16	22.5	2.0	9.6
N	GENERAL MTRS (CLS E)	45 34	44.5	0.0	0.0
Q	HOGAN SYS INC	8 3	4.625	0.0	0.0
Q	INFORMIX CORP	28 7	8.25	0.1	1.5
Q	INTELLICORP INC	4 2	3.25	0.0	0.0
Q	KEANE INC	18 7	14.25	0.8	5.9
Q	LOTUS DEV CORP	34 15	19	0.8	4.5
Q	MANAGEMENT SCI AMER	14 8	8.375	0.5	6.3
Q	MICRO PRO INTL CORP	4 2	2.313	0.1	5.7
Q	MICROSOFT CORP	71 45	54.25	2.0	3.8
Q	MORINO ASSOCIATES INC	20 12	17.875	-0.1	-0.7
Q	NATIONAL DATA CORP	32 19	24.75	1.0	4.2
Q	ON LINE SOFTWARE INTL INC	14 4	5.25	0.0	0.0
Q	ORACLE SYS CORP	22 11	20	1.9	9.1
N	PANSOPHIC SYS INC	19 12	14.125	1.0	7.6
Q	PHOENIX TECHNOLOGIES INC	18 12	15.5	0.8	5.1
Q	POLICY MGMT SYS CORP	26 16	23.75	-0.3	-1.0
Q	PROGRAMMING & SYS INC	19 8	17.25	0.6	3.8
Q	RABBIT SOFTWARE INC	3 2	3	0.1	4.3
Q	RELATIONAL TECHNOLOGY INC	21 12	15.5	0.4	2.5
Q	REYNOLDS & REYNOLDS CO	25 17	23.625	-0.9	-3.6
Q	SEI CORP	22 14	17.25	-0.3	-1.4
Q	SHARED MED SYS CORP	27 14	17.25	0.6	3.9
Q	SAGE SOFTWARE INC	8 6	7.75	-0.1	-1.8
Q	SOFTWARE PUBS CORP	27 8	16.75	-0.1	-0.7
A	STERLING SOFTWARE INC	8 6	8.75	0.6	4.5
Q	SUNGARD DATA SYS INC	20 14	18.8	1.3	8.2
Q	SYSTEMATICS INC	34 24	31.125	0.0	0.0
N	SYS. SOFT INC	27 12	26.75	0.0	0.0
Q	VM SOFTWARE INC	18 7	17.625	0.4	2.2
	Semiconductors				
N	ADV MICRO DEVICES INC	17 7	9	0.6	6.6
N	ANALOG DEVICES INC	18 10	12.75	0.6	5.3
Q	ANALOGIC CORP	9 6	8.75	0.6	2.6
Q	CHIPS & TECHNOLOGIES INC	21 11	14.125	0.4	2.7
Q	INTEL CORP	37 19	24.375	1.5	7.1
Q	LSI LOGIC CORP	14 7	10.875	0.3	2.4
Q	MICRON TECHNOLOGY INC	26 12	16.375	0.6	9.6
N	MOTOROLA INC	55 36	42.125	1.5	2.4
N	NATL SEMICONDUCTOR	18 8	10	0.6	6.3
N	TEXAS INSTRS INC	66 26	42	2.0	6.0
A	WESTERN DIGITAL CORP	18 11	16.125	0.9	3.4
	Peripherals				
Q	ALLOY COMP	6 2	2.75	0.0	0.0
N	AM INTL INC	8 3	5.125	0.9	9.1
Q	AST RESH INC	17 7	8.875	0.6	6.3
Q	AUTO TROL TECH CORP	9 3	9	0.0	0.0
Q	BANCTEC INC	12 6	10.625	0.6	4.5
Q	CIPHER DATA PRODS INC	10 6	9.625	0.6	2.7
Q	COGNITRONICS CORP	4 2	2.375	0.1	5.6
Q	CONNOR PERIPHERALS	10 7	8.75	1.3	16.7
A	DATAPRODUCTS CORP	14 8	14.125	0.6	3.7
Q	DATARAM CORP	8 6	7.375	0.0	0.0
N	EASTMAN KODAK CO	83 26	45.25	-0.9	-1.1
Q	E M C CORP MASS	18 4	5.375	0.8	13.2
Q	EMULEX CORP	11 6	9	0.4	3.5
Q	EVANS & SUTHERLAND	25 13	16.25	0.6	3.2
Q	ICOT CORP	6 2	2.5	0.0	0.0
Q	INTERLEAF INC	21 6	8.625	0.3	6.0
Q	IOMEGA CORP	6 2	3.75	0.1	3.4
Q	LEE DATA CORP	4 3	3	0.0	2.1
Q	MASSTOR SYS CORP	4 2	3.313	-0.1	-1.5
Q	MAXTOR CORP	18 6	9.75	1.5	18.2
Q	MICROPOLIS CORP	20 6	8.375	1.5	24.1
Q	MINISCRIBE CORP	14 6	8.5	0.9	11.5
N	MINNESOTA MINQ & MFG CO	66 56	62.25	-0.4	-0.6
Q	PERSONAL COMPUTER PRODUCTS INC	7 5	4.875	0.6	6.0
Q	PRIAM CORP	3 1	1.315	0.6	16.7
Q	PRINTRONIX INC	11 7	8.625	0.6	6.3
N	QMS INC	14 6	6	0.6	12.3
Q	QUANTUM CORP	14 10	14	0.6	4.7
N	RECOGNITION EQUIP INC	12 6	11.875	0.0	0.0
Q	REXON INC	9 6	7.25	0.6	11.5
N	SEAGATE TECHNOLOGY	23 7	10.25	2.4	30.2
N	STORAGE TECH CORP	4 1	1.875	0.1	7.1
Q	TANDON CORP	3 1	1.125	0.1	6.6
A	TEC INC	6 2	2.875	-0.3	-8.0
N	TEKTRONIX INC	20 10	21.5	1.4	6.6
Q	TELEVIDEO SYS INC	2 0	0.438	0.1	18.6
N	XEROX CORP	63 50	58.25	-1.0	-1.7
	Leasing Companies				
Q	AMPLICON INC	10 6	10.25	1.3	7.4
N	CAPITAL ASSOCIATES INTERNATIONAL INC	7 4	5.375	0.5	8.5
N	COMDISCO INC	25 17	21.25	0.8	3.7
Q	CONTINENTAL INFO SYS	8 2	2	-0.3	-11.1
Q	LDI CORPORATION	14 10	12.75	0.8	2.0
Q	PHOENIX AMERN INC	4 3	3 1/8	0.1	1.6
Q	SELECTERM INC	6 3	4.875	0.1	2.6

EXCH: N = NEW YORK; A = AMERICAN; Q = NATIONAL

Smooth start

Good news prompts market patience toward job-cutters

Chalk it up to post-holiday mellowness: Good news moved tech stocks last week, while other news basically left them in place.

Digital Equipment Corp., on the eve of eagerly awaited workstation announcements, broke 100; DEC closed on Thursday at 100⅛, up 1¼ points from the week's starting price of 98⅞. Oracle Corp. announced yet another quarter of upward-spiraling sales and profits and saw its stock rise 1¼ points to 20¾. Apple Computer, Inc. picked up a technology research power base in Cambridge, Mass.; its stock picked up 2 points, closing on Thursday at 42¼.

On the other hand, in the wake of a reported net loss and diminished revenue for its second quarter, On-Line Software International, Inc. stock closed where it opened the week at 5. Continental Information Systems Corp. also held at 2⅛ after announcing a planned employee reduction that will bring the firm's recent job-cut total to 300. Wyse Technology announced a 15% work force reduction and closed at 6⅝, down ⅝ of a point. Alliant Computer Systems Corp. announced a work force reduction of almost 20% and closed at 4⅛, down ⅛ of a point.

NELL MARGOLIS

Bull

FROM PAGE 1

Bull with some "serious disjunctions" that will be beneficially eliminated, Bellomy added.

The employee cuts, Pampel said, in no way signify s change in Honeywell Bull strategy; rather, they are aimed at creating s company in condition to pursue strategies already in place.

Manufacturing and administration will take the hardest hits; "we're not touching sales," Pampel said. Details with regard to geographical impact will not be known until the company determines how many of the approximately 1,000 employees now eligible for early retirement will take advantage of what Pampel described as a "fairly generous early retirement plan."

"So much of where it hits will depend on the outcome of the early retirement plan," Pampel said. Whatever the outcome, though, Honeywell Bull will continue to vigorously pursue research and development activities at both of its current major R&D locations here and in Phoenix, Pampel said. Of the employees eligible for early retirement, approximately 650 are located in the Boston area; 250 now work at the Phoenix plant.

Charles P. White, program director of industry service at the Gartner Group, Inc. in Stamford, Conn., saw last week's action as "the precursor of s general [Honeywell Bull] reorganization that I've been expecting for some time."

White predicted that the company will further move to place its European operations under a single marketing group in preparation for the 1992 formalization of the European Economic Community trade alliance. Also, he said Bull might reduce headquarters staffing in pursuit of the distributed management, or decentralized decision making, that many market analysts regard as a hallmark of a survivor in the data processing arena.

The decisive tone and content of last week's announcement, Bellomy said, also signaled Pampel's recognition that Honeywell Bull has an image problem to overcome before it can become the computer market contender it wishes to be. "He's beginning to put his mark on the company," White said.

As predicted, Honeywell Bull announced earlier last week that French co-owner Groupe Bull had acquired 22.6% of the shares formerly owned by Minneapolis-based Honeywell, Inc., leaving Bull as majority owner with 65.1%, Honeywell with 19.2% and Japan's NEC with 15%. Pampel was emphatic in stating that the latter layoff announcement had "absolutely nothing to do with" the long-planned ownership shift. "As s matter of fact," be added, "Bull itself is going through some of the same kind of streamlining."

Alliant cuts one-fifth of jobs

BY NELL MARGOLIS
CW STAFF

LITTLETON, Mass. — Alliant Computer Systems Corp. stripped down for action in the increasingly competitive minisupercomputer market last week, paring the company of 75 employees — almost 20% of its work force.

Alliant said it expects the restructuring to decrease the company's annual costs by approximately $20 million. This, Alliant hopes, will thereby speed the company's return to the profitability that has eluded it for the past two quarters and is likely to prove missing when results are announced for the fourth quarter ended Dec. 31, according to President Ronald Gruner. It will also generate s "material" one-time fourth-quarter charge, Gruner said.

"The bare fact of the restructuring isn't likely to surprise many people. The magnitude of the write-off might," said Jeffry Canin, an analyst at Hambrecht & Quist, Inc.

While Alliant declined to quantify the impending write-off, Canin speculated that it could be in the $10 million to $15 million range.

Need to absorb

Canin called the move "more reactive than strategic" on Alliant's part. An early entry in the minisuper market, Alliant has been faced with the need during the past several months to absorb recently acquired subsidiary Raster Technologies, Inc. while battling a barrage of fierce competition, said Theresa Liu, an analyst at Montgomery Securities in San Francisco.

The purchase "expanded Alliant's product line but perhaps diffused its corporate focus," Liu noted.

Workstation announcements anticipated from Digital Equipment Corp. (see story page 1) are expected to further intensify the competitive pressure. Gruner, however, appeared sanguine with regard to the effect on Alliant of s DEC onslaught.

"Truly, the competition for us — implicit now, explicit in six months — is Digital," he said. "There's a fair amount of pent-up business out there, waiting to see what Digital brings out." When they see, Gruner said, "we think that s lot of them will decide on Alliant."

MAI hints at sweeter offer; Prime scorns it

BY NELL MARGOLIS
CW STAFF

TUSTIN, Calif. — MAI Basic Four, Inc. last week turned up the heat in its hostile bid for Prime Computer, Inc., indicating s willingness to sweeten its $20-per-share offer. Prime viewed the sugar as thinly coating an unpalatable proposition, and Prime users remained unruffled, even in the face of MAI's recent claim that more than 50% of Prime's shares have already been tendered.

In s letter addressed to Prime Chairman David Dunn and Chief Executive Officer Anthony Craig, MAI Chairman Bennett LeBow urged the cost savings of s negotiated transaction and suggested that MAI ownership might be inevitable.

Anything but, retorted Prime. In a letter to LeBow, Dunn called "absolutely untrue" MAI's contention that Prime's experience "must lead you to believe that there is no serious alternative bidder for Prime" and invited MAI to withdraw its bid.

Citing s litany of allegations of wrongdoing against LeBow and partner William Weksel, as well as major financier/co-bidder Drexel Burnham Lambert, Inc.'s recent agreement "to plead guilty to multiple felonies, several of which involved the fraudulent use of inside information," Dunn concluded that "we are skeptical that Drexel, Weksel and yourself would treat Prime and its stockholders any better than you have treated your customers and/or stockholders in previous situations."

Big eyes, big stomach

Early derided as all but incredible, the small California company's attempt to swallow up the far larger Massachusetts concern made a huge stride toward credibility with its year-end claim that holders of 24.2 million of Prime's shares have already accepted its offer.

Added to the 1.9 million Prime shares already controlled by MAI and Drexel, this gives the would-be acquisitor more than half of Prime's outstanding shares.

Nevertheless, last week's letter did not appear to be written from s position of strength, according to Stephen Dube, an analyst at Shearson Lehman Hutton, Inc.

The coy "offer to make an offer" nature of the correspondence, he said, cast doubt on MAI's confidence that it could amass the 85% of outstanding Prime stock mandated under applicable Delaware law to achieve a successful hostile acquisition.

In addition, Dube said, Prime's recent reorganization, consisting of s realignment and consolidation of business units as well as an approximately 10% work-force reduction, is expected to save the company approximately $50 million in 1989, making Prime worth more than it was when MAI priced its original bid.

Prime stock, which has been inching upward, closed Thursday at 18¾.

"If Prime can get over $20 without opening their mouths, this offer could be moot," Dube noted.

Prime users do not appear greatly disturbed by MAI's actions.

"I can't say I'm excited about the prospect," said Jim Tunis, president of Lincoln National Information Service, Inc., a wholly owned subsidiary of Fort Wayne, Ind.-based Lincoln National Corp., which owns about 18 Prime systems.

Big enough?

"I was a little concerned when MAI first made its bid," said James Gaspers, MIS coordinator for the city of Scotts Bluff, Neb. "I still am. I'm not sure that a company the size of MAI can give us the level of support we're used to, and I'm not sure they'll have the wherewithal to keep the company alive."

Sharing the latter concern is Massachusetts Federal District Judge A. David Mazzone. Late last year, Mazzone enjoined MAI's tender offer pending further disclosure with regard to the deal's financial framework.

This decision was made particularly in light of Drexel Burnham's recent decision to plead guilty to six felony counts of mail, wire and securities fraud and a decision by the Delaware Chancery Court that upheld Prime's "poison-pill" provisions.

DCA chief steps down

ALPHARETTA, Ga. — Amid a spate of disappointing financial news, Digital Communications Associates, Inc. (DCA) announced last week that President and Chief Operating Officer James F. Ottinger resigned to pursue other business interests.

DCA Chairman Bertil D. Nordin will assume the duties of president until a successor is found. Nordin had previously served as president before promoting Ottinger to the post in 1987. Ottinger joined DCA in 1986 when his firm, Forte Communications, Inc., was acquired by DCA. Ottinger was not available for comment.

DCA also revealed that it will post s one-time charge of $12.6 million in connection with its December acquisition of Digital Transmission Systems, Inc. (DTS) — almost as much as the $12.8 million acquisition price.

The charge put DCA $4.2 million in the red for the second quarter ended Dec. 31. Without the charge, earnings would have been $8.3 million, or 57 cents per share, a 14% drop from year-earlier levels. Sales fell 5% to $52.2 million, placing DCA's six-month revenue slightly below fiscal 1988 levels.

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TRENDS

'Service' redefined

Customers are redefining the term "service," and vendors have a tall order to fill. Four or five years ago, service referred almost exclusively to hardware maintenance. Now that hardware has become so reliable and service prices have dropped, users seek more than repairs.

Contributing to changes in customers' view of service is the shifting landscape of the user environment. Use of multivendor systems, networking and remote services is rising. Technical competence among users is growing.

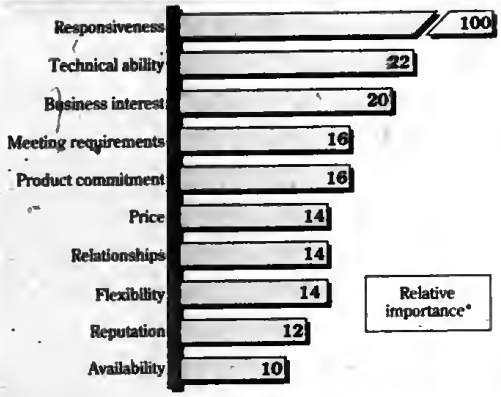
And MIS departments are taking on new roles: as contractors to develop and implement user applications; as vendors to provide installation, training and support; and as utility companies to offer telephone and transmission services.

The Ledgeway Group, Inc., a Lexington, Mass., market research firm specializing in the service industry, asked 45 MIS executives at Fortune 1,000 firms what they want from service providers. They found service is now a crucial factor in the product-buying decision. Quality of service and support lands in the top three factors influencing the executives' first-time and repeat purchases.

Customers also want vendors to understand them — not only their business practices but, more important, their technical environments. Vendors, they say, have proven uncooperative in multivendor settings.

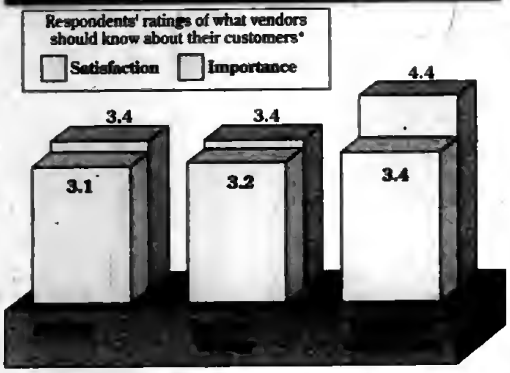
LAURA O'CONNELL

MIS' criteria for service vendors



*Factor mentioned most was rated 100; other factors rated proportionally

Evaluating the relationship



*Based on a scale of 1 to 5; 1=low, 5=high

Shoppers' priorities shift between initial and repeat purchases

SOURCE: THE LEDGEWAY GROUP, INC.
CW CHARTS: FRANK C. O'CONNELL

INSIDE LINES

A Prime opportunity? Novell is expected sometime during the next four weeks to make a joint announcement with Prime, which is currently beset by a takeover campaign from MAI Basic Four. Sources close to both companies say to expect a Unix port of Netware. Last month, Novell cited Unix support as one of its goals for 1989, and beleaguered Prime is said to be looking for an entry into the PC LAN arena. Network consultant Frank Daubeck suggests that Novell may wind up with a Unix port that is more specific to the Primos operating system rather than a generic product that will sing under many AT&T Unix System V-based operating systems.

Ask not for whom the Bell tolls. While DEC President Ken Olsen last fall was publicly denying published details behind the rumors of AT&T courting DEC as either a merger partner or takeover target in 1985, AT&T apparently came a-courting again, according to sources within DEC. With DEC's stock price wallowing in the $85- to $90-per-share range, AT&T saw DEC as an attractive target once again. Sources say DEC, on the very day of AT&T's approach, initiated a 10 million-share buyback of its own stock to bolster the price and fend off the suitor. Instead of responding to the published reports of the 1988 rumors, Olsen attacked, blasting *The Ultimate Entrepreneur*, a book by *Computerworld* editors Glenn Rifkin and George Harrar.

Don't look for DEC equipment with that speaker wire. Although Tandy has made the PCs that will debut at DEC's desktop announcement Tuesday, they will not be sold at the neighborhood Radio Shack. A Radio Shack spokeswoman said some subtleties exist that differentiate the DEC and Tandy machines. But for the most part, she said, the machines are "Digital's in name only."

Speaking of channels . . . Sales of the Tandy 5000, the company's Micro Channel Architecture-compatible PC, have exceeded expectations, said Ed Juge, director of marketing. Juge said that although Tandy is trying to keep up with back orders, sales are small in comparison with IBM PC AT-type system sales. But he noted that Tandy has "a hell of an advantage" over other clone vendors competing against IBM's locked-up distribution channels because the Tandy 5000 *can* be found at the neighborhood Radio Shack.

Buyouts and takeovers and all that jazz. Computer industry investment banking, mergers and acquisitions firm Broadview Associates' first contribution to the Bush administration would be considered a fairly big deal by most standards: Partner Edward I. Metz will ply his talents as a jazz pianist at the president's inaugural ball later this month.

$5 million and counting. This month, Microsoft will start spending money to promote its Excel spreadsheet for the PC, and it won't stop until it has blown $5 million. The effort is aimed at turning the heat up on Lotus, which has no graphical spreadsheet and — still — no 1-2-3 Release 3.0. Look for aggressive pricing, rebates, seminars and anything else that will help the product move out the door. Meanwhile, Microsoft plans to get a jump on the Presentation Manager market by shipping Excel/PM by the middle of the year. Look for a $50 upgrade charge.

Ringing into MAP. Expect to see AT&T become a Manufacturing Automation Protocol player in the near future. AT&T R&D subsidiary Bell Laboratories is reportedly working on an interface that will run MAP's Token-Bus protocol on top of fiber-optic cable, which now has no official place in MAP.

No spotlight-sharing this time. At DEC's lavish desktop rollout tomorrow, it will be K. O. solo. Recent DEC micro-related announcements have been held with Olsen introducing a micro partner CEO. Last year, it was Apple's John Sculley and Ashton-Tate's Ed Esber. Not this week; other CEOs will be as invisible as the fruits of the year-old Apple-DEC alliance. Anybody who has spotted a tangible DECapple product on a desk should phone it into the hot line (800-343-6474 or 508-879-0700) and get News Editor Pete Bartolik to roll out the news team.

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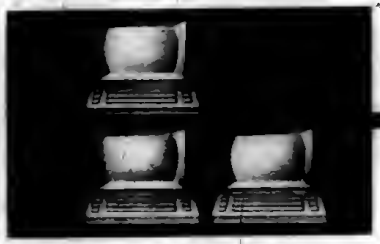

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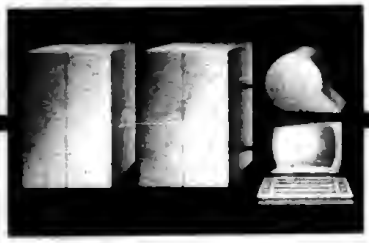

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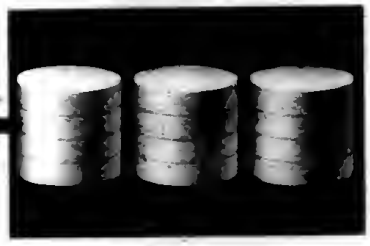

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